

FACTORY ACCOUNTS

“The counting-house of an accomplished merchant is a school of method wherein the great science may be learned of ranging particulars under generals, of bringing the different parts of a transaction together, and of showing at one view a long series of dealing and exchange.”

DR. JOHNSON, in *Preface to Koll's "Dictionary of Commerce."*

FACTORY ACCOUNTS

THEIR PRINCIPLES AND PRACTICE

A Handbook for Accountants and Manufacturers

WITH

APPENDICES ON THE NOMENCLATURE OF MACHINE DETAILS;
THE INCOME TAX ACTS, THE RATING OF FACTORIES;
FIRE AND BOILER INSURANCE, ETC.

INCLUDING ALSO

*A GLOSSARY OF TERMS AND A LARGE NUMBER OF
SPECIMEN RULINGS*

BY

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Sixth Edition, Revised and considerably Extended



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PRÉFACE TO THE SIXTH EDITION.

IN view of the continuous demand for this work, we have taken the opportunity presented by a further edition of adding to and rearranging the chapters it previously contained, whereby it more adequately reflects the great progress which has been made in cost accounting methods, since, in 1887, we made the first attempt to place before English readers a systematised statement of the principles relating to Factory Accounts.

The changes that have taken place in methods of production, the continuously increasing use of machinery, and the larger proportion of the cost due to its use, have rendered it desirable to deal in greater detail than hitherto with the apportionment of machinery charges. Additional chapters are therefore now devoted to consideration of this matter. v

In the preface to our first edition we stated that in endeavouring to supply a want which we knew to exist, we but indicated the direction for useful work. Since then others beside ourselves have pursued this path, and it is as a result of the helpful criticisms, commentaries, and expansions of the principles we enunciated in 1887 that

we are able again to place before our readers a book which is of practical service under present day conditions. •

Mr. Garcke desires to record his obligation to his friend and colleague Mr. Fells, who has undertaken the work and responsibility of revising and extending the preceding edition of this book.

April, 1911.

PREFACE TO THE SECOND EDITION.

THIS work is, we believe, the first attempt to place before English readers a systematised statement of the principles relating to Factory Accounts, and of the methods by which those principles can be put into practice and made to serve important purposes in the economy of manufacture.

It is not necessary to convince men of business of the advantages and importance of correct mercantile book-keeping; but as regards their factories and warehouses, they are for the most part content to accept accounts which are not capable of scientific verification. Such accounts can only be regarded as memoranda of transactions.

Our aim has been to show not only that as great a degree of accuracy can be attained in factory book-keeping as in commercial accounts, but that the books of a manufacturing business can scarcely be said to be complete and reliable unless they are supplemented by, and to a large extent based upon, the accounts special to a factory.

The principles of Factory Accounts do not differ in the main from those general rules on which all sound book-keeping is based, and we have but applied fundamental axioms to the practice of an important and extending branch of industrial accounts. With the view of rendering

the book of special utility to Accountants we have not dealt with the principles and practice of Accounts in so far as they apply merely to elementary and commercial book-keeping, as to do so would, in large measure, be a work of supererogation. The diagrams showing the relation between Factory and Commercial Books will, we hope, with the numerous specimens the book contains, render the information we have to present of service to those who, while concerned in manufacture, and therefore interested in our subject, have not occasion to inquire closely into the practice of accounts.

The various appendices dealing with the legal, financial, and other questions connected with factory administration, are submitted in the belief that they will be regarded as indicative of matters calling for the careful consideration of those engaged in industrial pursuits.

October, 1887.

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FACTORY ACCOUNTS:

THEIR PRINCIPLES AND PRACTICE.

CHAPTER I.

INTRODUCTORY.

WITH the rapid and continuous development of the modern Factory System there has arisen a need for regulations which would not have had application when production was carried on under a comparatively simple industrial organisation. By the aid of machinery the specialisation of labour is now carried to an extent which usually involves the passing of an article through as many hands or machines as there are processes in its production, and renders a further extension of routine and registration necessary. Under manual labour a simple form of accountancy sufficed to ascertain the cost of working up material. Intricate accounting was also not required in connection with the production of articles under a system of domestic or cottage industry, or under the early type of the factory system dating from the time of Henry VII., when master manufacturers, weary of municipal and guild restrictions, organised little communities in country places solely for industrial purposes, and so arranged as to afford

greater scope for the combination and division of labour.* The industrial conditions of society have however been changed by the introduction of steam, of electric power, and by the continuously increasing extent to which it is found economical to expend large sums in the installation of machinery and other plant, and thereby to expend relatively much smaller sums than would otherwise be the case in direct labour in order to obtain the ultimate product. Change has also arisen through the establishment of large factories, where numbers of persons of both sexes co-operate by the division of labour in the production of articles of consumption or use.

Under these altered conditions employers find it economical to adopt methods of supervision and of registration which, *prima facie*, make production more costly. The advantages of the saving of labour by the use of machinery, and of the combination of labour—of each workman confining himself to one process, and that always the one for which he is best fitted—are so great that the expenses of the necessary organisation are insignificant in comparison. Experience has shown that wherever the magnitude of the operations renders it practicable, every further extension of this principle of specialisation results, in spite of the increased expense of administration, in economic advantage.

The legislation with regard to factories and workshops, regulating the employment of children and women and their hours of labour, as well as providing for their health, education and safety, the legal restrictions with regard to adult employes and the necessity of providing compensation for all classes of labour for accidents arising out of, or in connection with, their employment, afford but some of "the many

* "The Industrial History of England." Gibbins. London: Methuen.

indications of the universality and complexity of the methods of organised production which now obtain. Although these changes in our industrial arrangements have already been fraught with many far-reaching consequences both material and moral, they have been of comparatively recent growth.

"In the course of little more than a century the industrial framework of the whole civilised world has been radically reconstructed, and more changes have occurred in consequence, even more obvious and tangible change—changes conspicuous upon the very face and features of the country itself—than for certainly the whole of a previous thirteen hundred years. But it is only quite recently that any endeavour has been made to trace the continuity of the various impulses, historical and economical, that have been concerned in the evolution of this particular method of production.*

Under these circumstances, it is perhaps not surprising that systems of regulating the intricate affairs pertaining to a factory have until recently been determined entirely by empirical methods.

Although the term Factory Accounts may be familiar, and its meaning sufficiently evident to persons acquainted with manufacturing business, or experienced in any operations requiring records to be kept of materials, plant, wages, the use of machinery, and stock, yet it is not infrequently assumed, even by accountants, that the ordinary commercial method of book-keeping by double entry, without the special subsidiary books which every trade demands, suffices for every kind of business.† The fundamental principles applicable to

"Introduction to a History of the Factory System," by R. Whateley Cooke Taylor. London: Bentley.

† Thus, *The Accountant*, in reviewing an earlier edition of this work, said:

accounts necessarily hold good throughout all the branches of book-keeping ; but many businesses involve, in addition

General principles of book-keeping and particular trades.

to the mercantile transactions familiar to every one acquainted with the routine of an office or counting-house, multifarious and often extensive operations, of which the employment of labour and payment of wages, the purchase of raw materials and their conversion into manufactured commodities by the use of machinery, and the organisation and supervisory work in connection therewith, are but some of the outward manifestations ; and for their proper registration special methods of book-keeping have to be devised.

Requirements of a manufacturing business.

In the case of manufacturing firms the operations referred to call for careful analyses of expenditure, sometimes necessitating the storage of large quantities of various kinds of raw material, and the warehousing of goods to a considerable extent, as well as the manufacture, purchase, or erection, and gradual wearing out, of valuable plant and tools. All this implies accurate adjustments of accounts. When large sums are paid in wages, it is essential, if the business is to be economically conducted, that the time during which the work-

"It is rather concerned with the wages and time books, stock books, and matters of a similar nature, which as a rule do not come within the scope of an accountant's duties." An indication of the new spirit is however to be observed in the review in *The Accountant* of the address at Sheffield in October, 1910, of the President of the Institute of Chartered Accountants, in which it says, "Many professional accountants have hitherto neglected the subject of Cost Accounts. To these Mr. Plender's remarks will, we hope, come as a timely reminder of what is due from them if they wish to keep abreast of the times. But however that may be, the younger generation may, with every confidence, be recommended to lose no opportunity of increasing its experience, seeing that it is in all probability in this direction that the next big development in professional accountancy will be experienced, so far at least as this country is concerned."

people are employed and the work upon which they are engaged, should be accurately and sufficiently recorded. It is equally important that the material should be systematically charged to the work on which it is used, and the machinery cost ascertained. As regards the last-mentioned item of cost, it has been well pointed out by Professor Davisson * that labour cost without machinery is a different thing from labour cost with machinery, and that in machinery industry the expense of working the machine, as well as replacement charge, must be included in the real labour cost of production. It is only by means of systematic records that

Profit or loss on individual transactions. leakage, waste, and fraud can be prevented, and that employers can know the cost of any article of their manufacture, and be able to determine accurately and scientifically, not merely approximately and by hap-hazard, the actual profit they make or loss they sustain, not only on the aggregate transactions during a given period, but also upon each individual transaction. †

In a business, the operations of which vary widely in character, this special knowledge as to the pecuniary result of a particular piece of work is of paramount importance, for it is not only conceivable, but very probable, that the presence or absence of this information may determine the policy to be pursued in accepting or rejecting large con-

Profitable and unprofitable branches. tracts, for while in selling or contracting the price is limited or determined in the majority of cases by competition, it is obvious that the ultimate determining factor is the direct cost below which, in the absence of some equivalent advantage in

* "The Bargain Theory of Wages."

† "In brief, Cost Accounts are the key to economy in manufacture, and are indispensable to the intelligent and economical management of a factory." ("Cost Accounts." W. Strachan. Stevens & Haynes.)

other directions, a manufacturer or contractor will not knowingly supply for any length of time. The merchant or middleman has endeavoured to buy from the manufacturer at the lowest price he could get him to accept, and has endeavoured to sell to the retailer or user at the highest price which competition with other manufacturers permitted; but in the future the selling price of commodities will probably stand in more close and direct relation to cost of production than hitherto, and cost accounts will provide the bases for estimates or tenders. In the computation of this cost allowance for the depreciation of wasting assets must necessarily enter.

The lack of knowledge of cost has thus often meant that manufacturers unwittingly have been selling below it, but have considered their price remunerative, because on the whole their business was profitable. The tendency in large organisations to combine the productive and distributive functions emphasises the need for "larger knowledge of cost in the productive department, larger knowledge of prices in the distributive department, larger knowledge even of foreign cost of production." * As Professor W. J. Ashley has forcibly pointed out, whatever the price above or below cost at which it may be wise at any particular moment to sell, it is most desirable that the manufacturer should know what his goods do in fact cost him.† There is always a danger, when only the general result of a business is known, of departments or processes which are relatively unremunerative being unduly fostered, and of those which yield more than the average profit not receiving adequate attention. Employers should not, as is too frequently the

* H. John Falk "On Changes in Trade Organisation," *Economic Journal*.

† Professor W. J. Ashley, "The Enlargement of Economics," *Economic Journal*, June, 1908.

case, be entirely dependent upon the periodical profit and loss accounts for their knowledge as to the financial result of their transactions, but should at any time, and at any stage of manufacture, be able to ascertain, *pro tanto*, rapidly and reliably, the actual, and not merely the estimated, cost of production of any given article of their manufacture. They should also be able to determine, without the delay and labour of a survey or inventory, the quantity of stock and of raw material on hand, or of any particular item or part thereof. It would be discreditable to any cashier if his principal could not ascertain by a glance at the books the amount of cash in hand, but **Stock should be knowable without survey.** found it necessary to have the money counted; and there can be no reason why the same punctilious book-keeping should not be adopted in the case of goods. It is not too much to say that for a manufacturing or trading concern to be well organised, the storekeeper or warehouseman should be able to state, by referring to his Stores or Stock Ledgers, the actual quantities of any kind of material, or stock, on hand with the same facility and precision as the accountant can ascertain from the books the balance of cash at the bankers, or the amount of securities in the safe. By means of detailed records of cost accurately compiled, and carefully considered and criticised, purchases of stores and expenditure of wages may be regulated, production facilitated and increased, economies introduced, and the business thereby placed on an improved competitive and profit-earning basis.

The advantages of systematic factory accounting are however receiving recognition in all industrial countries. Thus Mr. A. Lowes Dickinson, C.P.A., F.C.A., in an address at the annual meeting of the American Association of Public Accountants, held at Atlantic City, New Jersey, in

1908, summarised the principal objects to be attained by a modern cost system as—

(1) To ascertain the cost of the same product at different periods in the same mill, or at the same periods in different mills, and so to remedy inequalities in cost by reducing all to the results shown by the best.

(2) By an accurate ascertainment of the cost of output to maintain running book inventories which will show at any time, without a physical inspection how much of each class of materials, supplies, etc., is on hand, and so reducing stocks and capital invested to the lowest state consistent with efficiency, and at the same time avoiding the delay, expense, and interruption to business consequent upon the old method of taking a complete physical inventory at a specific date in each year.

(3) The preparation of statistical information as to costs of parts, quantity, and variety of output, relative efficiency of different classes of labour, and relative costs of labour and material, between different mills and periods.

(4) The preparation of periodical statements of profit and loss in a condensed form, readily giving directors all material information as to the results of the business.

Mr. Dickinson considers the last as the least important of the objects aimed at, and that the cost of a system designed merely to produce periodical statements of profit and loss, without providing for the other and far more important objects enumerated under the first three headings, may be considered as money thrown away.

These are only a few of the questions which present themselves in a cursory consideration of the nature of Factory Accounts. The subject of Cost admits of very varied treatment. When the incidental charges and depreciation are of a more or less

**Prime cost
and depreciation.**

fixed character, it may be sufficient to know the cost of an article in wages and material, that is, in Prime Cost, only ; but if the use and wear and tear of plant and incidental expenses form a more direct element in the cost of production, it is highly desirable to apportion such items over the product or over the various operations or departments. The allocation of these charges thus presents many interesting problems, whilst the numerous methods of "writing off" and of determining the proper incidence of items such as deterioration of plant, tools, buildings, deserve the serious attention of owners of property, and tax to no mean degree the abilities of accountants, and their power of obtaining an absolutely accurate statement of affairs.

For the above-mentioned purposes, among others, systematised factory books are essential. The advantage of such books, clearly representing the actual state of affairs, is particularly evident when a business is for disposal ; or is being converted from a private firm into a joint stock company, or when the whole or some part of the factory has been destroyed by fire, and it is necessary to prepare a claim on insurance companies. The figures in the commercial books then require to be substantiated in detail. There is little doubt also that under a well-organised system of Factory Accounts, each employé should feel that he is contributing to the attainment of accurate records of costs ; and that it is necessary that his account of the time he spends, and the material he uses, should be adequate and precise. This begets general confidence in the manner in which the accounts are kept, and on occasion of strikes or reduction of wages, or resort to the sliding scale, employés have less hesitation in accepting the

Incidental charges.

Sale of business, &c.

Moral effect of proper accounts upon employes.

results shown by the books as correct and as based on fair principles.

It will be seen, even from this superficial summary, that it is not feasible to record accurately, and with requisite detail, in the ordinary commercial books, all the numerous entries necessary for the proper registration of the operations of a large manufacturing establishment. It is moreover essential that factory books should have columns for time spent in labour, and the hours machinery is in use, and for the weight or measurement of materials and the number of articles, in addition to cash columns for values; and this, which is an indispensable condition in factory books, would not serve any useful or practical purpose in commercial books, but would on the contrary mar their utility. The insufficiency of the commercial books alone to represent the transactions is conspicuously evident in the case of railway, gas, and water companies, and large industrial undertakings. The factory books record the home trade and manufacture of the business, the commercial books its external transactions.

Factory books must not be considered, as is often the case, to be merely memoranda books, which are not necessarily required to balance.* They should **Assimilation of all books.** so assimilate to the books of the counting-house that the obvious advantage is not sacrificed of having a balance-sheet made up from the General Ledger which embraces, or verifies, or is in part verified by the balances of the ledgers and books kept in the stores and warehouses.

* "The Cost Accounting Books should never be considered as something separate and apart from the regular set of books of a concern; they should not be considered as inferior nor superior to the commercial and financial books, but they should in all cases be an integral part of the established system."—Professor H. C. M. Vedder in *The Business World* on "Cost Accounting."

No matter how far the subdivision of departments of an establishment be carried, or to whatever extent the principle of localising the book-keeping be applied, the concentration of the accounts—the merging of the departmental books and the verification of the manufacturing accounts in the General Ledger—should be kept constantly in view.

**Specialisa-
tion consis-
tent with
concentra-
tion.**

There is not any special theoretical or practical difficulty in establishing a separate set of books for each and any of the departments, if it be not attempted to make the proper working of all dependent upon the proper working of each, or if no regard be had to the necessity of attaining the highest degree of efficiency and despatch with the minimum expense. On the other hand, to devise upon sound principles, and to carry out efficiently and economically, a system of accounts which necessitates the departmental book-keeping in a large establishment being subsidiary to one centre, is

**Economy of
clerical
labour.**

a science as well as an art. That a system is not economical which is inefficient is but a truism, and although we appreciate the importance and the necessity of minimising clerical labour, there is no occasion to lay particular stress upon this consideration, as the tendency is to dispense with services which an adequate recognition of the value of sound book-keeping would probably show to be indispensable. Book-keepers and clerks being only indirectly engaged in the production of wealth, are often regarded as “unproductive” workers—using the expression not invidiously, but in a sense in which some economists employ it. The routine of the office is often limited by the number of clerks from time to time engaged, instead of the system of accounts and routine best adapted for the business being determined on, and a staff employed

proportionate to the work to be done. The wisdom of initiating by the dismissal of one or more clerks the retrenchment which in times of depression may be called for, is not always apparent. The maintenance of a perfect organisation may enable economies to be practised, in comparison with which the whole cost of the office staff is insignificant.* It is well, therefore to weigh carefully the *pro et contra* before relaxing vigilance over expenditure and the salutary checks upon wastefulness and extravagance in

Division of work.

manufacture which a good system of accounts affords. One of the disadvantages of insufficient records being kept is that book-keepers and clerks have often to spend much time in obtaining from foremen and workmen, after the event, information which should reach the counting-house in a regular and systematic manner. This is contrary to the principle that true economy is to be found in the specialisation of labour, and in clerks devoting themselves to clerical, and foremen and workmen to mechanical, work.

The task we have set ourselves is to explain the nature of factory books and the method of keeping them, and to show the *modus operandi* whereby the subdivision and localisation of the accounts may be made consistent with the system of book-keeping by

Ordinary commercial books not explained.

double-entry obtaining in the counting-house. We do not propose to enter upon a detailed explanation of the Ledger, Journal and Cash Book, and of the subsidiary books which constitute the

* "The frequently expressed fear of increased clerical expense is largely imaginary. Good costing is not an expensive luxury. Any reasonable expense is found in practice to be fully compensated by many savings and economies and real gain in efficiency. Cases exist of a sound system being worked by fewer clerks than were required to handle a mass of worthless makeshifts."—"Cost Records, or Factory Accounting." John Mann, jun., M.A.C.A. "Encyclopædia of Accounting."

system of commercial accounts whether kept on the Loose Leaf, Card, Slip, or other systems.* The numerous excellent treatises extant on general book-keeping render this needless, and we shall assume on the part of our readers that acquaintance with the elements of the subject which is essential to a proper understanding of factory and other accounts. For this reason chiefly we do not think it necessary to follow the precedent of writers on commercial book-keeping by tracing the entries of an imaginary firm through a series of model books. We do not

Specimen hesitate, however, to give specimen rulings
rulings. of the books and forms suggested in these pages for adoption, and for facility of reference these specimens are numbered consecutively, as indeed should be the case in actual practice. In this connection

Exterior of it may be well to point out that some regard
books and should be had to the exterior of the books, an
distinguish- advantage being derivable from the books of
able fea- each department or of each class being distinguishable by
tures. their bindings; similarly papers of different colours should be used for the various forms suggested, while

General ap- their rulings and headings may with advantage
plicability be printed in copyable ink. As in the majority
of books. of businesses the articles dealt in are reckoned in weight we think it well to show the specimen rulings with weight columns. As it is not possible to show the specimen rulings of books applicable to every trade we show only those of one class. Slight alterations in headings make these rulings applicable to trades using other measures, for the principles on which they are based are equally applicable to the liquid and mixing trades, such as those of

* An interesting description of Book-keeping on the Slip and Card System, is given in the lecture by E. E. Price, F.C.A., delivered to the Newcastle Chartered Accountants Students Society in 1906.

brewers, distillers, manufacturing chemists and others, as well as to paper and other industries in which there is a continuous production of one kind of commodity or to other enterprises where there are varying classes of products.* The relation of the various books to each other will be found further elucidated by the diagrams at the conclusions of Chapters II., III., IV., and VIII., showing the manner in which the books and forms assimilate to each other and converge into the Commercial Ledger.

Whilst not presuming to suggest that the forms and books of which specimen rulings are given apply universally and are incapable of modification either by subdivision or concentration, we believe that the principles underlying them are of general application and that the rulings will serve as useful examples. The cardinal principle to be observed being that the form of the records should be conducive to the easy allocation of expenditure to the object on behalf of which it was incurred.

In the next chapter we deal with the subject of Labour, defining the requisites of a proper wages system; and explaining, in as much detail as seems needful, the purpose of the books and the nature of the routine **Outline of contents.** which in our opinion should be adopted by manufacturers. It will then be necessary to explain the forms it is desirable to observe in connection with the purchase and consumption of materials for the purpose of

* "A clear perception of the similarities and dissimilarities is one of the great essentials to the practice of factory accounting. The fundamental principle is always the same, namely, the practice of making a record sufficiently full to constitute a clear accounting for the factory expenditure, and the object of the accounts is always the same, namely to eliminate waste from the operations."—"Factory Accounting as applied to Machine Shops." John Whitmore. *Journal of Accountancy*. New York.

manufacture, or the maintenance of buildings and the up-keep and renewing of machinery and plant. The question of Stores and the manner of dealing with the invoices for goods purchased will next demand our attention. In this connection we shall have occasion to explain the uses of the Stores Ledger and its relation to the subsidiary stores books and to the Commercial Ledger. Having considered the book-keeping and routine relating to the expenditure of labour and material for the purpose of the direct production of commodities, or for the working, maintenance and renewal of machinery and plant whereby direct labour is saved or supplemented, we shall be in a position to consider the important books in which this expenditure is concentrated, analysed, and properly apportioned to the resultant objects. The books by means of which this is accomplished are the Cost Books. Their object is to enable a manufacturer to ascertain the cost to him of any given operation, and thus afford him some of the principal data for the conduct of his business. There are many systems of Prime Cost in vogue, but the writers who in dealing with book-keeping generally have touched upon the subject are not agreed upon the definition of the term Prime Cost. In some instances the confusion of ideas and language has been carried so far as to render it necessary to speak of net and gross prime cost. Throughout these pages we take Prime Cost to mean, as shown in the Glossary, and as in fact the words imply, only the original or direct cost of an article in labour and material. Direct labour cost is, however, lessened by the use of machinery. The cost of maintaining and working this machinery is one of the facts ascertained through the Cost Books. This cost, supplemented by a provision for the necessary

replacement, has to be distributed over the purposes for which it is incurred through the Plant Books recording the working of the machinery. Cost of production we define to be the total expenditure incurred in the production of a commodity. In earlier editions of this work, we called the books referred to the Prime Cost Books or Prime Cost Ledgers, but we made provision for the inclusion therein of machinery and other charges. In the present edition, the rearrangement of chapters consequent upon our more exhaustive consideration of the subject of charges for machinery, aided thereto as we have been by the efforts of those who have followed us in this field of inquiry, makes it desirable to allude to those books as Cost Books or Cost Ledgers, and thereby avoid the misconception which an adherence to the original titles might involve.

The sale or distribution of manufactured commodities will next be dealt with, and at this point we think it well to draw a clear distinction between materials for manufacture and articles in the manufactured state. Until materials are converted into manufactured articles we speak of them as stores, but when so converted they are termed stock; and the book-keeping we recommend is based on this view. The accounts in the Cost Ledgers are debited with wages and materials spent in manufacture, with charges for use of machinery, and with the general expenses due to them, and are credited with the stock produced. The importance of this distinction between stores and stock will be evident when the subject is dealt with in detail. The eighth chapter treats of the Stock Books, which though in some respects analogous in their functions to the Stores Books, are as distinct from them as is consistent with the

principle of a system by which all the books of the establishment are required to merge into the Commercial Ledger, or to verify, or be verified by them.

This practically completes the outline of what constitutes the absolutely essential books in a system of Factory Accounts, but there are many other matters which have too important a bearing upon the subject of this work to admit of being passed over without reference. Such are the questions of surveys or inventories, and the numerous subsidiary books that are required in the management of factories, for the better understanding of the accounts, and for the consideration of the economic effect of various methods of remunerating labour. These matters are dealt with in subsequent chapters. As regards the question of surveys or stock-taking, we do not presume, in view of the varying requirements of different trades, to do more than to offer some more or less obvious suggestions which have a general application.

The Appendices contain a reprint of a paper on the advantages derivable from the use of symbolic nomenclature for parts of machines, some notes on the law of rating of factories containing machinery, and also some notes on the law of Fire Insurance and on the Income Tax Acts and other matters having reference to the subject of this work.

CHAPTER II.

LABOUR.

THE initial step in the organisation of a factory must perforce be the adoption of a system by which each person employed at a rate of pay on a time scale shall receive payment for the exact time employed. Such a system should necessarily be one in which the workpeople have confidence, and in which they themselves co-operate.

A wages system the initiative in the organisation of a factory.

In the present chapter we show how each employé's record of his or her own time may, through the instrumentality of the leading hand in the shop and of the time clerk, be compared, checked, and if need arise, corrected by the record kept by the timekeeper. By these means the possibility of an error either by over or under payment is reduced to a minimum, whilst fraud necessitates for its successful perpetration the connivance of the employé, the timekeeper, the leading hand of the shop in which such employé works, the time clerk, and of the clerk in the counting-house who makes up the Wages Book, and also of the cashier who pays the wages. Such collusion although not altogether impossible, is very improbable.

Proper wages system minimises error. Summary of chapter.

Further, we show that, by means of a weekly return, it is impossible for any one connected with either the counting-house or the factory to enter in the books wages for "dummy men." This phrase is used to designate such a

system of fraud as can only exist in a large undertaking where it is possible for the foreman, the time-keeper, or the pay clerk, either singly or in conspiracy, to show a larger number of men employed than is actually the case.

Creation of dummy men prevented.

By the use of the same return, fraud through the unauthorised alteration of the rates of pay of the work-people is prevented, and the authorised rate recorded for future reference. The regulation and recording of piece-work prices, and the payment of piece-work balances to those employés who have been paid during the continuance of piece-work at time rates, is described ; as are also the modes of controlling time made outside the factory and of preventing undue recourse to overtime.

Weekly return of alteration of rate.

It is then shown how deductions may, if required, be made from the wages of the employé, fines imposed for non-observance of rules, or other causes, for rent, or in respect of savings bank, sick, superannuation, or other funds ; or of the amounts of adverse balances on piece-work, or of the deductions authorised by the Factory Acts. Attention is called to the fact that the Wages Book may be correctly and concisely compiled from these various returns, and that it, in its turn, may, if thought well, be summarised for the use of the principal into a more condensed form.

Sick and other funds.

The possibility with very little trouble of obtaining receipts from employés is dealt with, provision against the misappropriation of unclaimed wages suggested, and consideration given to the mode of payment. The work of the time clerk in reference to the systematic allocation of the wages for the Cost Books, and of the timekeeper or other employé in reference

Receipts for wages. Duties of time clerk.

to the records required by the Factory Acts, is explained. The necessity of compiling a list of addresses and of obtaining information as to the character of employé's, as well as some miscellaneous matters, are incidentally dealt with.

At the entrance to a factory, or to a section or sections of a factory, there is almost invariably found a small building, where the time of the entry and exit of every employé is registered by a gate or time keeper, or by means of automatic time recorders or clocks. As a general rule, these clocks make an automatic record of the time of one employé on a card or sheet, or make a record of the times of several employé's on the same sheet. The working of these recorders and the routine in connection with the registration of the record slips is described later in this chapter. Where these recorders are not used the time is obtained by each employé, on entering the factory, being required to pass the time office and mentioning the number which has been allotted to him at the commencement of his engagement, receiving from the timekeeper a metal check, tally, or other ticket, bearing his number, and taken from a board, on which the checks have previously been consecutively arranged. In some cases, in order to save time the employé is allowed to take his own check from the board.

On leaving the factory the employé deposits this check in a box placed outside the time office. The checks are sorted by the timekeeper, and can, in any case of doubt or dispute, be compared with the entries made by him in a book which is hereafter described. The checks having been again placed on the board, the process referred to is repeated each time the workpeople enter or leave the premises. In some cases separate check boards are used

for, and a different series of numbers are allotted to, each department, and different sizes or shapes of checks are used for each shift.

Should a mess-room have been provided for the use of the employes there will not be any obstacle to the carrying out of the system if the mess-room is outside the timekeeper's lodge, but should it be situated inside the works, the checks can be issued from that point after meal hours.

Mess-room.

After admitting the work people, the timekeeper proceeds to register their time. He sees by the presence or absence of checks on the board what employes **Method of keeping time** are, or are not, in the factory. In a book so ruled as to show each employe's name and number, and each day of the week divided into four parts (for the time made before breakfast, after breakfast, after dinner, and overtime, or such other divisions as may be most suitable for the business), the timekeeper enters the employes present. This is in most cases done by a vertical stroke, absence being denoted by a horizontal one. In some cases the four divisions of time above referred to are shewn in the form of a square, thus \square ; or in cases where three divisions only are required, by means of a triangle, thus \triangle . In the square, the top stroke is supposed to represent the time before breakfast, the down stroke, right hand, that after breakfast, the base, the time after dinner, and the up-stroke, left hand, any overtime that may be made. In the triangle the down stroke left hand, is presumed to represent the first division of time, the base the second, and the up-stroke, right hand, the third. In printing the book the various lines of the square or angle may be faintly printed, and when entries are made, inked over completely or partially, as required.

TIME BOOK.—SPECIMEN No. I.

No. Name.	Trade.	Wednesday.	Thursday.	Friday.	Saturday.	Sunday.	Monday.	Tuesday.	Total Hours.

.. Absence during any or all of these divisions is, of course made apparent by the omission of the stroke or strokes. Specimens Nos. 1, 2, and 3 show a Time Book so ruled.

In large establishments automatic time recorders, whereby the employé makes his own record, are often used. The recorder generally takes the form of clock-work mechanism, fitted with a slot into which the employé drops a card bearing his number, and pulling a lever causes a record to be taken of the time at which he enters or leaves the works. The card is generally printed to last a week, and the machine so designed that the slot rises automatically day by day, thus corresponding with the spacing on the card. The cards are not retained by the employés, but on entry are taken by them from numbered places or pocket slips on the one side of the clock, and are afterwards deposited in corresponding places on the other side. In the case of time clocks which record the time of several employés on one sheet, the employé on arrival or departure, turns a key bearing his number

in the clock once, as if winding it, thus ringing a bell which indicates that the time and date has been printed in the register the clock contains. The record slips are summarised in a Time Book, in the same way as the records obtained by checks, and it is desirable that they should be retained for purposes of reference over the ensuing pay day, in case of dispute. In cases where there are a number of shops, some a considerable distance from the main entrance, the clocks are placed at the entrance of the shops, thereby ensuring that the time recorded is that at which the employé commences work; but when men are working overtime or at odd times, the record is usually taken, as a measure of precaution, on the time clocks at the main entrance. An arrangement whereby in some recorders the arrivals at regulator times are registered in one colour and late arrivals in another, has in practice much to recommend it. The "Rochester," "Dey," and the "Bundy" are among the time recorders at present most largely used.

If the employés are working in two or three shifts a separate Time Book may be used for each shift; or one **Double or treble shift.** book may be so ruled as to take all three returns. It may be desirable at irregular intervals to change the time keepers from one shift to another to lessen chances of collusion. The time of the work-people who are admitted into the works, or allowed to leave, at intervals between any of these divisions, may be shown by a red ink note of the number of minutes or hours' difference between the time at which they should have presented and did present themselves for admittance and departure, or, if the square and the triangle are adopted, by recognised shortenings of the strokes. The time at which employés are admitted into the works if late in arriving, will follow prescribed rules. No employé should

be allowed to leave work at an irregular time unless provided with a permit or "pass out" note, signed by his foreman, setting out the cause of such permission.

In some, and particularly in the larger, establishments, the functions of gatekeeper and timekeeper are quite distinct. The gatekeeper attends to the opening and closing of the gates, to the various callers thereat, and often records the times of the entry and exit of members of the staff and of visitors. So far as regards the time records, his duty consists in opening the gates at the prescribed times, seeing that each employé admitted receives or takes off the time board, or puts into the time box, as the case may be, one check only, closing the time box at the regulation hour, and forwarding it to the timekeeper. It will be seen that the general principle of recording the time is the same whether checks are given to the hands or taken by them from the time board or clock as they enter the works, and are deposited by them on leaving, or are deposited by them on entering and taken up on leaving the works.

If it be deemed desirable to have a record of the employés who periodically absent themselves, it may be kept in an Absentee Book ruled to show the names of those away on any particular day, and to bring out prominently the names of those who are most frequently absent. The same principle may be applied in recording, by means of a Time Lost Book, the names of those who are unpunctual. At each four-weekly or other period these absentee and time lost records should be summarised under names, trades, and times, and the foreman should record the steps taken in individual cases.

It may also be desirable to keep a similar record as to overtime (Specimen No. 4), and so prevent resort to it becoming chronic in the case of individuals, trades, or departments.

TIME RECORD SHEETS.

25

TIME BOOK.—SPECIMEN NO. 2.

No.	Name.	Trade.	Wed.	Thurs.	Fri.	Sat.	Sun.	Mon.	Tues.	Total Hours.
			△	△	△	△	△	△	△	

TIME BOOK.—SPECIMEN NO. 3.

No.	Name.	Trade.	Wed.	Thurs.	Fri.	Sat.	Sun.	Mon.	Tues.	Total Hours.
			□	□	□	□	□	□	□	

OVERTIME BOOK.—SPECIMEN NO. 4.

Date.	Employer's No.	Time.		Hours worked.	Allowance.		Total Time.	Remarks as to work.
		From	To		1	2		
						Double.		

Having thus booked the time, entry by entry, and day by day, the timekeeper at the conclusion of the week or fortnight, as the case may be, proceeds to cast across and

enter in the column provided, the total time made by the employé during such period, and then forwards the book to the office.

Each employé having been provided with a time board, sheet, or card, enters on it, in consonance with the instructions received from his foreman, a record of how his day's time is spent, giving in two or three words or in symbols, the nature of his work, the number of the order (if for plant or buildings, called the working order number, if for manufacturing any commodities, the manufacturing or stock order

Use of employé's time boards or record sheets.

TIME RECORD SHEET.—SPECIMEN NO. 5.

Name _____ No. _____

Day.	Nature of Work.	Order No.	Time.			
			Ordinary.		Over.	
			Piece Work.	Day Work.	Piece Work.	Day Work.

number), and the time spent thereon. In some cases the employés are supplied with sheets or cards, in book or portfolio form, but perforated for each day's use.

These time records, if used for more than one day's work, are perhaps most convenient if written on a form, which can be easily gummed at one end to a board. On these forms or time slips it is well to have two divisions ruled—the one for a record of ordinary time, the other for overtime. The forms used for different shops or different

classes of workmen may be distinguished by initial letters or signs ; or, as previously suggested, by the use of paper or cards of different colours or tints.

In some cases when a card is used it is found convenient to have it perforated so that each piece of work done is entered between the perforations, and the card split up and used in the same way as the time slips hereafter referred to. It is sometimes practicable to issue, or for employé to take, one of these cards for each operation from a rack near the foreman's desk in the shop, and by means of a Time Register to automatically record the time at which a certain order was commenced and finished, the employé placing the card in another rack when the completion of the order has been automatically recorded. Some of these Registers, such as the Calculagraph, automatically record the time spent on the work, as well as the time it was started and finished.

The records should be initialled by the shop foreman or leading hand, and afterwards copied by the time clerk into a Time Allocation Book. In a business in which the work is highly specialized, and in which the employé

is engaged on one piece or form of work only, and on that for some considerable time, it is possible, and may be found advantageous, to use these time slips as the direct sources of entry in the Cost Books * instead of the wages being analysed in the manner described later. It is essential that in either case the total entries made in the Cost Books on account of wages should agree with the total wages expended.

The Time Allocation Book previously referred to is cast up by the time clerk and forwarded, at the end of each payment period, to the office.

* See Chapter IV.

The two records of time made, viz. the Time Book (as prepared by the timekeeper), and the Time Allocation Book (as entered from the workpeople's own records, which are initialled by the leading hand), are, when sent to the office, compared, and in cases where differences arise, explanations obtained by the Wages Book clerk from the employé or the timekeeper. Should the explanation then given not be satisfactory, or should it not be received in time, it is incumbent on the clerk making up the Wages Book to see that the employé, pending the settlement of the question, is paid only for the lesser number of hours. In cases in which, owing to a breakdown, or inability of a leading hand or foreman to immediately start an employé on another order on completion of that on which he has been engaged, and there is a discrepancy between the time of the employé in the Time Book and in the Time Allocation Book, the time not profitably employed should be charged to a Waste account.

A suggested form for a Time Allocation Book, which may be ruled so as to take the records for a week, fortnight or month, is shown (Specimen No. 6).

Where employés are engaged outside the factory or works for any considerable period, and are unable to present themselves at the time office on commencing or finishing work, it is desirable to have an Out-works Time Record Sheet (Specimen No. 7), which the leading hand on the premises where the work is being carried on is asked to sign as a guarantee of the time being correctly recorded.

This Time Record serves as an authority to the timekeeper for the necessary entries in his book. In the margin of that book it is stated that the time was made outside the factory or works, the place and date being also shown.

TIME ALLOCATION BOOK.—SPECIMEN No. 6.

No. _____		Name _____		Folio _____ ending _____ 19____	
Days of Working Week.	Hours.	Overtime.		Description of Work.	Orders to be charged.
		$\frac{1}{2}$ Time.	Double Time.		
			Total Time.	Order Nos.	
			Overtime.		

The time clerk will treat this Time Record Sheet as equivalent to the Time Slip or Board previously alluded to.

It is well to draw the special attention of the customer for whom work is being done outside the factory to the request that he will note in the "Remarks" column any overtime made by his order, as many seem either to ignore or be ignorant of the fact that the higher rate generally paid for overtime adds very considerably to the cost of the work and sometimes to the amount charged for it.

The economic aspects of overtime in relation to fixed capital are dealt with in a subsequent chapter. For our present purpose it suffices to say that if the employer desires to keep a check upon, and to reduce to a minimum, the overtime that is worked, he should require the foreman or leading hand, in addition to giving an "overtime slip," or authority to work overtime to an employé, to be handed to the timekeeper, to

Return of overtime.

This return is initialled by the foreman or leading hand to show that the overtime has been sanctioned, and the clerk making up the Wages Book, to whom the return is

OUT-WORKS TIME RECORD SHEET.—SPECIMEN NO. 7.

Workman's No. _____ Name _____

[illegible]

N.B.—In all cases where possible this sheet must be signed by the person for whom the work is being done, or his representative, and must be posted so as to reach the time clerk by _____ a.m., on _____ day.

(Reverse side.)

19

 T_0

We shall be obliged by your seeing that the other side of this Time Sheet is correctly filled up as regards the time of arriving at and leaving your premises; and, having done so, by your signing the same. ‘

Should you desire overtime to be made please enter in the "Remarks" column that it is done at your request.

As these regulations are made to prevent mistakes and abuses, we trust they will have your kind attention.

31

For the Week ending 10

Return of Overtime made at

[illegible]

OVERTIME COMPARISON BOOK.—SPECIMEN No. 9.

[illegible]

handed, sees that, no overtime other than that shown therein is allowed to pass through that book.

Instructions can be given either to the time clerk or to the Wages Book clerk, or to both, to prepare a statement showing the amount spent on overtime in excess of the amount that would have been paid had the same work been done at ordinary rates.

This return can simply show the amount paid in excess in each trade or to each individual, or it can be in a more complete form, as shown in Specimen Ruling No. 9. It is desirable that the extra cost of working overtime should be noted in the cost records against the various orders on which it is incurred.

In factories where, owing to the solidarity of labour, a large number of men and women are unable to commence, or fully carry out, their work unless a smaller number of men or women of a particular trade are present, it is sometimes found advisable to insure the greater punctuality on the part of the smaller number by instituting a system of fines for late, and of premiums for early, attendance. Thus the man who was punctual would get his premium and wages for the time made, whilst the unpunctual man would, besides losing pay for the time he was absent, be fined. In some cases a system of voluntary fines is resorted to, employes purchasing from the gatekeeper tickets recording the rule which has been broken, and the amount paid in connection therewith. The amount so contributed is often used at regular intervals for festive or charitable purposes. Care should be taken in connection with any system of fines instituted that the provisions of the Truck Acts are respected. The number of times each employe is unpunctual is reported to the office by the timekeeper, and can of course be checked from the Time Books and record slips, if

PIECE-WORK RETURN.

33

PIECE-WORK RETURN.—SPECIMEN No. 10.

Week ending _____ 19 ____

Workman's Name _____ No. _____ Rate _____

Started on _____, 19____, at _____

Foreman.

Order No.	Reg. No.	Quantity.	Description of Work.	Rate	£	s	d.

	Date.	Hrs.	Date.	Hrs.	Date.	Hrs.	Date.	Hrs.	Overtime Allowances
Wednesday									
Thursday									
Friday									
Saturday									
Monday									
Tuesday									

Last Piece-rate _____ Total time _____ at _____

Last percentage on Day-work _____ Balance _____

Percentage on Day-work _____

Signature of Workman _____

No. received as above _____

Signature of Piece-work Clerk _____

Foreman.

Balance entered in Wages Book _____ 19 ____

Exd. _____

Time Clerk.

D

thought necessary. . The amount of premium or fine in each case would then be passed through the Wages Book.

Despite the former strenuous opposition of trade unions, the system of payment by results, generally known as piece-work, is extending. Not only do "the ablest and strongest masters generally insist on it as necessary to enable them to carry out their plans freely and to get their men to use their best energies, and such employers naturally beat in the race those who yield to the unions,"* but the employ  s are beginning to recognise that the advantages of the system are not confined to the employers, and are withdrawing or modifying their opposition. In many factories, boot and shoe, tailoring, coopering, cotton weaving, for example, the majority of the employ  s are generally paid on piece wages and not on time rates. The employ   is remunerated not on the basis of payment for time at a rate per hour, day, or week, but by a piece-work wage or specified price for the production of a standard article, or the execution of a specific process, both under normal conditions, with such modifications of the standard, either by extras or deductions, as may correspond with specified variations of the standard product, with adjustments in the rates in case of defective materials or tools supplied by the employer. Other modes of remunerating labour are referred to in our final chapter. ^

In factories where employ  s engaged at time rates are employed on piece-work, they should, when starting on it, be supplied with a Piece-work Return Form (Specimen No. 10), on which is specified the nature of the work, the extent of the job, and the rate at which it is undertaken. The^o piece-worker

**Method of
recording
piece-work.**

* "Economics of Industry." By A. and M. P. Marshah. London: Macmillan.

returns this sheet on the completion of the work, having entered upon it the number of hours spent on that particular job, for which he has been paid in ordinary course. The Return having been initialled by the viewer of the work, is passed on to the time clerk, who checks the time entries made thereon from his Time Allocation Book, gives it monetary form and enters in his Allocation Book the difference between the value of the output at piece-rate and the amount already paid at time-rate. Any balances favourable to the employé may be placed to his or her credit at the next piece-work settlement, whilst adverse balances may be deducted from the time pay, or from the next favourable balance.

The latter course is in practice preferable, as it prevents any question being raised by representatives of the Trade Union as to deduction from time pay reducing wages below the ordinary standard rate.

The provisions of the Factory Acts and of administrative orders authorised by the Home Secretary as to the publication of particulars of piece-work rates, or as to check weighing, in certain trades have, of course, to be borne in mind.

In some cases it will probably be found impracticable, owing to the nature or pressure of other work, to keep an employé continuously on the work which he has taken at a piece-rate. Under these circumstances the foreman or leading hand should at once notify the time clerk, in writing, that he has taken the employé off piece-work and put him on time-work. It may be found desirable for the foreman or leading hand to keep a Log Book, in which such interruptions to piece-working are noted. In a large establishment this function might be discharged by the piece-work viewer.

PIECE-WORK ANALYSIS BOOK.—SPECIMEN No. II.

Date.	Man's Name.	No. Article	W. No.	Articles, No. of	Rate	Amount.	Time employed.	Rate.	Time made.	Amount of Balance.	Piece-work Percentage on Day Work	Remarks.
												1st Price.
												2nd Price, reduction of each.

In any event it will be found very desirable to have a record to which reference may, if necessary, be made at the time of settlement as to interruption to piece-working.

The time clerk, after duly examining and vouching the piece-work returns, forwards the same to the office, where they can be re-checked in a general or detailed manner, if thought desirable.

Considerable advantage accrues from a Piece-work Analysis or Register Book being compiled from these sheets. As indicated in Specimen No. II, such a book would show the various rates at which work was undertaken, as also the percentage in which any kind

Piece-work Analysis Book. of piece-work is favourable or unfavourable to either the employer or the employé; and it would serve as a record or check in fixing piece-work rates. From this source also comparisons between the percentage of piece-work rates and day-work prices ruling in the various shops or departments can be obtained.

Having been checked, these piece-work balances may be entered in the Wages Book

(Specimen No. 14). The procedure applicable in the case of a piece-worker is also applicable when more than one employé is concerned either as an assistant or as a member of a piece-work gang. At the conclusion of the contract the remaining balance will be apportioned between the workers on the agreed basis, and their individual results credited to them in the wages sheets. It will also be found advantageous, and in large establishments indispensable, for a return or returns to be sent by the foreman at regular intervals, either to the clerk responsible for the Wages Book or to the principal, enumerating the names, trades, and rates of pay of employés who have been engaged since the date of the last return, and giving similar information concerning those who have resigned or been discharged. This return should also record any increases in the rates of pay, any transfers from one department to another, also the names of employés who are to be fined for neglect of duty or for any other cause, of those

WAGES ADVICE.—SPECIMEN NO. 12.

RETURN OF MEN ENGAGED, RESIGNED, DISCHARGED, PROMOTED, TRANSFERRED OR FINED, AND OF ALLOWANCES AND PREMIUMS,

at _____ Works, for the Week ending _____ 19__

ENGAGED.

No.	Name.	Occupation.	Rate.	Name and Address of last Employer.

[Specimen continued.]

WAGES ADVICE.—SPECIMEN NO. 12—(*continued*).

LEFT.

No.	Name.	Occupation.	Remarks.

PROMOTED OR TRANSFERRED.

No.	Name.	Occupation.	From	To	Rate		Remarks.
					From	To	

FINED.

No.	Name.	Occupation.	Amount.	Fined for

[*Specimen continued.*]

WAGES ADVICE.—SPECIMEN NO. 12.—(*continued*).

ALLOWANCES AND PREMIUMS.

No.	Name.	Occupation	Amount.	Premium allowed for	Remarks.

Entered on Pay sheet by _____ Signature _____

who are to receive premiums for some special reason, or who are on leave, or absent through illness or injury, but to whom wages or allowances are to be paid, and of those who are entitled to "black money" (or "dirty money" as it is often called), or other extras, with the respective amounts.

These returns should be duly entered in a Wages Rate Book (Specimen No. 13). At any period the rate of pay entered in the Wages Book for all or any of the employes can be checked from this book.

Unless a special book recording the length of the employe's service and of his or her varying rates of pay and other details is kept, the Wages Rate Book may be made to serve such purpose.

If a large number of employes follow the same trade, or if there is a recognised scale of rises on a period of employment or other basis, it may be well to supplement the Wages Advice (Specimen No. 12) by a return, sent into the counting-house on the first day of each month, showing the names and numbers of those to whom it is proposed during the month to grant

**Successive
advances in
rates.**

It will be seen from the foregoing that the compilation of the Wages Book is not a difficult matter, and that, if ordinary care and attention are given to it, a clerical mistake should not occur; whilst the number of persons through whose hands the returns pass, each acting as a check on the others, should prevent speculation and fraud.

**Compilation
of Wages
Book.**

The specimen ruling of a Wages Book (No. 14) is, we venture to think, applicable in detail to most, and in general principle to all, trades.

This specimen ruling shows columns for the entry of any stoppages or deductions for rent of houses, cottages, looms, frames, troughs, or machinery, where these belong to the employer and are hired to the employé, as also for fuel, sick and provident societies, superannuation fund, or other purposes, but it must be remembered that under the "Truck Acts" no such stoppage or deduction can be made, unless there is a written agreement or request, signed by the employé, authorising such deduction or stoppage. All employés, therefore, who require such or other deductions to be made should be requested to sign a Stoppage Agreement Form, or Book, should the latter be the more convenient.

An exceedingly useful "Memorandum upon the Truck Acts," issued for the Home Office, and obtainable from His Majesty's printers, sets out the various purposes for which deductions are allowable, provided they are reasonable. The more recent report (1909) of the Departmental Committee on these Acts has not yet found legislative sanction, but it shows the trend of probable legislation.

The Truck Acts, of course, do not prevent the practice of "subbing," whereby an employer sometimes permits an employé on occasions of misfortune or special expense to

WAGES BOOK.—SPECIMEN No. 14.

No.	Name.	Occupation.	Rate.	Time Made.	Amount.	Overtime.		Piece-work Credit Balances.	Premiums or Allowances.	Total.	Fines.	Debit Balances.	Savings Bank. These columns may be used for the Savings Bank, Superannuation Fund, & Medical Attendance, Fuel, &c.			Total Deductions.	Total to be Paid.	Remarks.
						Time	Amt.											

Week Ending 19

SUMMARY OF WAGES.—SPECIMEN No. 15.

Trades.	No. of Men.	Amount.	Overtime.	Piece-work Credit Balances.	Premiums and Allowances.	Totals.	Fines.	Piece-work Debit Balances.	Savings Bank Superannuation Fund and other Deductions.	Total Deductions.	Total Paid.	Remarks, including average rate of pay, &c.

Week Ending 19

receive an advance of wages to a limited extent, such advance being without interest and repaid by deduction from the pay-bill each week until extinguished.

If it is necessary to have a permanent record of the character of an employé, as evidenced by the fines imposed or the premiums granted, such information can be inserted in the Rate Book by means of additional columns, or special books arranged with reference to trades, as well as to individuals, might be used for this purpose.

Whether a separate banking account for wages be kept or not, necessitating the employer each week signing a cheque **Summary of wages.** for the exact amount of the previous week's wages, so that the account may be kept in balance, he may find it desirable to have a summary of the Wages Book prepared (Specimen No. 15), showing the number of men and women employed in the various trades, the aggregate of their wages, their average rates of pay, etc. The Wages Book and Summaries of Wages should be filed for ready reference, so that, *inter alia*, if required for any purpose under the Employers' Liability or Workmen's Compensation Acts, or in connection with any insurance fund created by the employer, or any policy of insurance taken out by him, as a provision against claims under those Acts, the total amount paid during a certain period to any employé, may be ascertained with precision and detail.

Before passing from this branch of our subject it may be well to mention that the signatures of the pay clerk and another responsible person in whose presence the wages are paid are often considered sufficient evidence of **Receipts for wages.** payment. Pay Bills, if used, often contain places at foot for the signatures of foreman, the calculators and checkers of the amounts, of the cashier, and for a declaration by the pay clerk that the Wages

shown thereon have been paid by him at the place and on the date shown. Even in large establishments what is in reality a receipt for the wages paid may be obtained from each employé by a process which entails but little trouble. The time or pay clerk (as may be considered the more expedient) writes out on a slip of paper, ruled and printed for the purpose, the date, the employé's number, and the amount receivable. These forms can be distributed by the various foremen to their subordinates prior to the pay. Each employé presenting himself at the pay-table hands in this "Pay-slip" to the pay clerk. These receipts can be compared with the Wages Book.

If instead of a Wages Book pay sheets, rolls, or bills are used, the receipts can be obtained on the original documents by distributing them in the different shops, but this would involve considerable labour as compared with the procedure first described.

Incidentally it may be pointed out that in some undertakings advantage arises from, and clerical labour is saved by, the wages being tabulated in four weekly, instead of monthly periods. In such cases, as the thirteen four weekly periods would not coincide with the calendar year, some adjustment would be necessary as regards any broken period at the beginning and end of the year.

In all cases where men do not present themselves at the pay-table in ordinary course the pay clerk **Unclaimed Wages Book.** should make an entry in a book specially provided for that purpose, showing the man's name, the date, and the amount of his pay (Specimen No. 16).

A signature should be obtained in this book for the money of each employé, who obtains his or her wages in any way other than at the pay-table on the ordinary pay-day.

By means of this book the principal can also see at once what wages have not been claimed, and can give instructions as to the disposal of such amounts as have been so long outstanding as to render their being claimed improbable.

Where any considerable number of employé's are unable,

UNCLAIMED WAGES BOOK.—SPECIMEN No. 10.

No	Name.	Trade.	Amount	For Week ending	Date Paid.	Received by

owing to their hours of work, to be at the pay-table at the appointed time, there may be two or more
• Payment of wages to deputy. pays at suitable hours, or the employés so absent may empower one of their fellow-workers to receive wages on their behalf (Specimen No. 17).

In cases in which employes are engaged permanently or temporarily outside the factory, a receipt for the wages remitted them may with equal ease be obtained by means of a form ruled and printed in copyable ink (Specimen No. 18).

The amount of expenses to be entered in the 7th column of Specimen No. 18 against the name of the employé are obtained from the Outworkers Travelling and other expenses sheets, which are forwarded to the office by the official in charge of the outworks operations, by whom they

To the Cashier.

Name _____

Occupation _____

No. _____

The Person receiving the amount above named is responsible for delivering the money to the person to whom it is due.

WAGES REMITTANCE FORM.—SPECIMEN No. 18.

Dear Sir,

We enclose you herewith _____ amounting to £ _____ in payment of wages and expenses during the _____ ending _____ 19 _____ as per details below. Please obtain the receipts on this form and return to _____

Nos. of Notes_____

„ Postal Orders

[illegible]

should be certified. Each item of expense, such as railway fares, lodging money, or allowance for daily maintenance, "walking time," etc., should be separately shown.

As regards the method of paying wages, we may point out that in large establishments, prior to drawing the amount from the bank, it is almost obligatory that the totals of each page of the Wages Book should be analysed so that such proportions of gold, silver, and copper may be obtained as will prevent the necessity for further change. This is done by means of a cash sheet (Specimen No. 19), which also serves as a

**Method of
paying
wages.**

CASH SHEET.—SPECIMEN No. 19.

No. of Page.	Notes.	Sovereigns.	Half-Sovereigns.	Silver.	Copper.

check upon the addition of each page in the Wages Book, and by assigning to each page of the Wages Book the exact proportion of cash required to pay all the wages entered on that page, is further useful in localising mistakes in the process of counting out the money to be paid to each employé. The process of distributing wages is often by means of small tin boxes bearing the numbers by which the workpeople are known for time-taking and recording purposes. These numbers of course agree with the numbers of their checks (see p. 20). In some cases the amount is placed in envelopes on which is printed

spaces the employé's name, number, and the make-up and amount of his wages are entered.

If tin boxes are used they are placed in trays constructed to hold 100 each, and arranged in ten squares (Specimen No. 20).

**Money
trays.**

The employés are called to the pay-table by their numbers and in consecutive order, the duties of pay clerk

MONEY TRAY.—SPECIMEN No. 20.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

being discharged by the cashier, or some official who has not been engaged in the process of counting the money, or in the compilation or checking of the Wages Book. The pay clerk hands to each employé his or her particular tin or envelope against the presentation of the receipt form (explained on page 44). If owing to the large number of hands, the

ABSTRACT OF WAGES FOR THE WEEK ENDING

19 ____.—SPECIMEN N. 21.

[illegible]

pay would otherwise take up much time, it may be found expedient to have two or more pay-tables and pay clerks, or there may be variation, one set of workpeople being paid first one week, second another week, or payment may be made from shop to shop, and so forth ; but on the whole it is advisable that the process of paying wages should be completed in as few minutes as possible. As a general rule payment takes place after hours, that is in the employés' time. Insurances against misappropriation by cashiers and pay clerks can be affected with any of the well known Guarantee Societies.

From the Time Allocation Book (Specimen No. 6) the time clerk should make an abstract weekly, fortnightly, or monthly as required, showing the various working or stock orders on which time has been spent. This summary or abstract should show against the various orders the cost of labour during that period in the respective departments or trades (Specimen No. 21).

The totals so compiled should agree with that in the Wages Book for the same period. This abstract of wages will form the basis of the debit to the Cost Ledger (see Chapter IV.) for labour expended upon the various operations carried on.

It is evident that the totals so entered on the Abstract of Wages Sheet may easily be traced back to the Time Allocation Book, and that any more detailed information that may be required can thus be easily and promptly obtained.

In some cases it is desirable to post these Wages Abstracts in a Wages Journal under the respective Stock, Plant or other orders (to be hereafter described), with cross divisions for various trades, and post the totals of these entries to the respective orders in the Cost Ledger, every quarter or half year, as may be considered the more serviceable. In such cases reference for details can, when desired, be made back from the Cost Ledger to the Wages Journal and to the Wages Abstracts, with the records on which the latter is based.

**Diagram of
books and
forms.**

The diagram opposite page 52 will serve to show the relation of the various forms and books referred to in this chapter.

It remains to be observed that when a person who has been engaged presents himself at a factory for work, as the posting of the rules in conspicuous places in the works is not of itself sufficient to prove knowledge, the timekeeper should obtain his signature to a book or form testifying that the rules of the factory have been duly read and noted. If any system of fines is adopted, the attention of the employé should be called thereto when engaged, and if agreed to by him a record of such consent should be made. In some cases a book

**Adhesion
to factory
rules by
employés.**

containing the rules and regulations of the factory, a short description of the time system in use, the method of dealing with material, and the series of numbers or symbols used for Standing Orders, is supplied to skilled workmen on their joining the business. The timekeeper should also obtain the name and address of the last employer, and fill in and forward to the counting-house a character form for transmission to him. This form, which would ask for information as to the proposed employé's character and capacity, his rate of pay, and possibly other details of a

Character personal nature, when returned filled in should,
book. after consideration, be filed in a Character

Book or on the Card Index or other system, so as to be easily available. The address of every employé should be

Address taken when engaged, and should be entered in
book. an Address Book. It is very desirable that

periodically the whole of the employés should be asked for their addresses, and these when obtained compared with the existing entries. In cases in which workpeople may be required on urgent or pressing work it is especially desirable to know their correct addresses, and it may therefore be necessary to impose a fine for not notifying change of address.

The timekeeper should furthermore keep Registers, in accordance with the Factory Acts, of the children, young persons, and women employed in the factory

Register of as well as a record of the cleansing and white-
women and washing, etc., of the shops as required by those
children.

Acts. He should also inform some responsible person when any children are engaged, and should see that the necessary certificates as to education are produced, and that the certifying surgeon after making the examination required by the Act duly attests the Register.

We have not dealt with the appropriation of fines imposed, or the deductions on account of superannuation, sick, or other funds, or with the occupation by employés of houses belonging to the firm, as these more correctly appertain to the books of the system of commercial accounts, with which it is not our province here to deal. In the last case, should an arrangement be made by which the work-people, in consideration of not paying rent for the houses they occupy, receive less wages than they otherwise would, then the interest on the capital invested in the buildings forms an element in the cost of production, and should be debited to the Cost Ledger as a percentage upon the wages paid or in common with the indirect expenses to be referred to later. In practice, however, it is found that it is preferable to pay full wages, to collect the amount of the rent from the work-people who occupy the houses, such amount being dealt with as revenue, and to enter the particulars of and amounts received from individual tenancies, with records of any premises "void" or unlet, weekly or quarterly on a Rent Roll, or in a Rents Receivable Book, ruled to show for each quarter the weekly or other receipts from each tenant, with columns for arrears brought and carried forward. These records are of special utility where the system of compounding for rates is adopted.

Houses belonging to firms occupied by work-people.

CHAPTER III.

STOKES.

ONE of the first points to be considered in a review of the accounts of a manufacturing or trading concern is the question of the purchase of the materials or commodities which are essential to the carrying on of the business, whether the articles obtained are to be used as plant or for its maintenance, or are for the purpose of manufacturing, or are simply to be retailed. We aim, therefore, in this chapter, to show the wants to be provided for in order to insure economy in the purchase and consumption of material, and to suggest those forms by which an employer may assure himself that the raw materials of his trade are being bought in the cheapest market, and economically and properly used.

The initiative in the purchase of materials must necessarily be taken by those more directly engaged with the details of manufacture, such as the foreman or storekeeper. The storekeeper, having found either that he has not a supply of the required or similar material, or that his stock is low and needs replenishing, enters a record of his requirements in a Stores Requisition Book, which can be periodically submitted to the principal, whose province it is to determine when, and in what quantity, it is desirable to purchase material.

If there are numerous branches the Requisition Book would be entered up in the counting-house, daily or weekly

as the exigencies of the business require, from the forms sent in by the heads of the several departments. These requisitions may be as shown in Specimen No. **Stores Requisition.** 22. If made in duplicate the copy may, after the goods are ordered, be referred to the requisitionist, with any information as to the terms and conditions of the order which it is necessary for him to know. The Stores Requisition Book should contain columns for entering in the date of requisition, a description of the goods, the department or purpose for which they are required, and the name of the firm to whom it is proposed to give the order. Columns showing the rate at which the goods are to be supplied, the quantity in stock, the last purchasing price, and the name of last supplier, and the maximum and minimum stocks—as these may from time to time have to be altered according to circumstances—may also be provided for the guidance of the principal. When the entries in the Requisition Book have been examined and allowed, an order for the articles would be issued. The advantage of all orders for the purchase of goods emanating from one centre, instead of each department being able to supply its own individual needs, is that it permits the principal of the business not only to control in a very large degree the character and amount of the consumption, but he, or the buyer or the purchasing department, as the case may be, can thus contract far more favourably for the supply of the goods required than would otherwise be the case. Even if by this concentration a little delay in obtaining supplies is caused, it need not lead to inconvenience, as the requisitions can, in the majority of cases, very well be made in anticipation of the demand arising.

Should the principal determine to contract for the supply of certain goods over a period of time, it is desirable that

the invitation-to-tender forms issued by him should be uniform, and should state clearly and concisely the conditions on which the goods will be purchased and paid for. This form should also state when and where the patterns or samples may be seen, the date on which tenders

STORES REQUISITION.—SPECIMEN No. 22.

No. _____ Department. In _____

A supply of the underment. and articles is required.

Article.	Purpose	Date of last supply.	Quantity last supplied.	By whom supplied.	Rate of last supply.	Present Stock and Remarks with Maximum and Minimum Stocks.

STORES REQUISITION BOOK.—SPECIMEN No. 23.

Date of requisition.	Goods required.	Wanted by	Purpose.	To be ordered from	Order.		Invoice.		Remarks. Max. Stocks. Min. Stocks.
					No.	Rate.	Amount.	Date.	

will be received and opened, and the usual notification that the proposing purchaser does not bind himself to accept the lowest or any tender. The Prevention of Corruption Act has done much to safeguard the rights and interests of employers against malversation, and it is advisable that all

employés should be as well acquainted with its provisions as the employer.

It is desirable that a Stores Contract Register be kept, that particulars of each contract should be entered therein, with the date of the various supplies, so that the position under the contract may be rapidly and easily ascertained.

If the contract or order is to supply to pattern or sample, the storekeeper should keep a Pattern or Samples Register, showing dates on which duplicates (which usually bear some identifying seal or mark), were forwarded or handed to suppliers, and a record of the place of deposit of the originals.

Specimen ruling No. 23 shows the headings of a Stores Requisition Book, which will probably suffice in most cases, but the other headings referred to would also be found useful.

The date and amount of the invoice can, of course, only be inserted at the conclusion of the transaction and when the goods are delivered, but their entry gives a useful record, and is valuable as a check.

It having been decided to order the material requisitioned, there should be made out from such requisitions the order to the vendors. These orders should **Order Form.** specify the conditions on which the goods are ordered as to delivery, carriage and packing, the route by which they are to be sent, the place and time at which they will be received, the mode of testing quality, the terms and date of payment, including the cash discount, if any, which will be deducted, and instructions as to acknowledging receipt of order, sending advice notes, invoices, and statements of account.

If there is any arrangement as to payment of penalty in case of delay in delivery, or defects in manufacture, the clause or condition of the order should state that it is as by way of liquidated damages. In this connection it may be

pointed out that it is desirable that those concerned with the ordering, accepting, or forwarding of material or finished products, should have some general acquaintance with the provisions of the Sale of Goods Act, 1893.

In some cases, contracts are entered into for supplies extending over a period, and the conditions are either embodied in correspondence, or preferably in the clauses of a formal contract. These contracts should be summarised in the Stores Contracts Register previously referred to. It is desirable that orders for deliveries of portions of these contract supplies should be made on the ordinary order forms, any necessary alterations being made thereon. In other respects, this mode permits of the same procedure being observed with contracts as with orders.

In the case of purchases of small value through Petty Cash, the cashier should advise the storekeeper monthly as to nature, quantities, and values of goods so purchased, the storekeeper should nominally pass an order for the goods, as if the cashier were an independent supplier, and the debits to the working orders would thus find their way into the books in the usual manner.

In some cases orders to supply goods may be contained in a letter or a series of letters, or in some cases of emergency goods may be ordered orally. In these instances it is desirable for reference and other purposes, as well as for facilitating dealing with the invoices, that *pro forma* orders should be sent to the suppliers, even if it is only possible to do so after the goods have been delivered.

The order forms should, for reference, be numbered consecutively by the ordering department, and subsidiary references, by initial letters, symbols, or numbers, might appear as numerators over the order number, or be interwoven therein, so that, through the order number, the

department or person requisitioning, with the number of the requisition, can be clearly traced, and a great deal of inter-reference thereby be saved. The use of the back of the order form for invoicing purposes will be referred to when dealing with the procedure as to invoices.

It is sometimes considered that if the order forms have counterfoils, are press-copied or are manifolded by means of carbon sheets, and signed by a responsible person, the necessity for a Requisition Book is not very apparent. It will be found, however, in practice that while the work required to keep such a book is but slight, the facilities it affords for reference, and for noting the orders when executed, present many advantages. It is a question of the relative value of labour, and it is often more economical for a clerk to give regularly a portion of his time to certain work than for an employer to have occasionally to give a few minutes. If it is thought desirable to send copies of the orders issued to several departments, the necessary number of copies can be made in one operation by the use of carbon sheets.

To avoid confusion it is often considered that all goods received should pass through the Stores Account, even if ordered for some particular work only, and not be charged, as is sometimes the case, to the work as direct goods.

Different systems obtain in different trades of dealing with the registration of invoices for goods supplied. Many firms stipulate for invoices in duplicate or triplicate to be distributed among, and dealt with by, the departments concerned. In some instances the order forms sent by the purchasers are printed and ruled on the back, so that that portion of the order form can also be used by the vendors for invoicing purposes. This is a matter of considerable convenience to the purchasers,

and if the back is ruled and printed in copyable ink, the use of the form can be deprived of any disadvantages to the vendor. In almost all cases it is stipulated that an advice note of the dispatch of the goods should be sent to the officer in charge at the place to which the goods are sent, and it is generally desirable that the supplier should be requested to send a duplicate to the ordering department. In such cases the officer in charge may be requested to send to the head office daily a Stores Received Form ruled to show the species of good from whom and whence they have been received, the weight, measurement, number, remarks as to condition, and having a column for the initials of the clerk at the head office, who compares this Stores Received Form with the invoice, and makes on each the necessary numerical cross references to the other. Among the advantages of this method may be mentioned the retention of the original invoice at the head office, with the consequently lessened liability to loss, or delay, and, in cases where it is desirable, the easier restriction of information as to price or other conditions of the order. A system much in vogue is that of making one invoice perform all functions. When this plan is adopted the vendor of the goods should be requested to send the invoice direct to the counting-house, notwithstanding that in pursuance of directions the goods are delivered at the works or elsewhere accompanied by a delivery note. Immediately on receipt of the invoice it should be examined with the view of ascertaining whether the general conditions of the order have been complied with, and the price charged is as stipulated. If the primary request to quote the order number is not complied with it is desirable, without further examination, to return the invoice to the suppliers forthwith, so as to prevent a recurrence. Should the invoice be found

correct, it should be numbered and sent to the storekeeper, foreman, or other person to whom the goods have been delivered, for him to certify as to the correctness or otherwise of their quantity and quality; and it can also be signed by the works manager as to quality if an additional check is thought necessary. After comparison the counterfoil or copy of the order should be so marked or ticked as

INVOICE REGISTER BOOK.—SPECIMEN NO. 24.

No. of Invoice.	From whom received	Nos. of Orders.	Folio in Requisition Book.	Amount of Invoice.	Date sent to Storekeeper.	Date returned by Storekeeper	Date handed to Bought Day Book clerk.

STORES RECEIVED BOOK.—SPECIMEN NO. 25.

Date.	No. of Invoice.	Supplied by	Articles.	Dimensions.	No.	Weight.			Rate.	Amount.	Account to be charged.	Stores Ledger folio.
						Cwts.	Qrs.	Lbs.				

to show that the invoice has been received. It may be advisable, if the number of invoices is large, to enter them on receipt in a Register Book (Specimen No. 24). The procedure is for the storekeeper to enter the invoice in a **Stores Received Book** (Specimen No. 25), and mark on it the folio on which it has been entered in that Book.

uses of this book will be more fully explained as we proceed with our subject, and particularly in the chapter on Surveys. It will suffice at this stage to mention that it is the duty of the clerk keeping the Stores Ledgers to see that the store of certain commodities never falls below the minimum quantity named by the principal, or exceeds the maximum quantity authorised by him.

References to the various records in connection with the purchase of material, and the certificates as to the quality of the goods purchased and of the correctness of the quantity and rate can be shown on the invoice itself by means of india-rubber stamps typed as shown below (Specimen No. 27).

**Certifica-
tion of
invoices.**

INVOICE ENDORSEMENT.—SPECIMEN NO. 27.

Invoice Register	No.	__
Stores Requisition Book	Fol.	_
Stores Received Book	Fol.	__
Invoice Allocation Book	Fol.	

2nd part of

Received in good condition.....Storekeeper
Approved.....Works Manager
Rate and Amount checked.....Invoice Clerk
Certified.....Accountant
Passed for payment on.....by.....
Cheque or Cash paid on.....by.....

Upon being returned to the counting-house the invoices are entered in an Invoice Allocation **Invoice Allo-**
cation Book. or Bought Day-book, from which the items are posted in the aggregate in the Commercial Ledger to the

debit of Stores, and in detail to the credit of the vendors of the goods. As these are counting-house books we do not show specimen rulings.

It will be obvious that by these means the debit to the General Stores Account in the Commercial Ledger, on account of material purchased, will agree with the aggregate of the special accounts posted from the Stores Received Book to the Stores Ledger.

Cases arise in which material's or tools are purchased, and for convenience are stored at the seller's works or elsewhere, or are waiting forwarding instructions at a carrier's wharf or railway shed. If the vendor's invoice is dealt with prior to the goods passing through the Stores, the goods represented by the invoice should be debited to a "Stores at Out-Stations Account" or "Stores in Transit Account," and not to the General Stores Account. In these accounts stores at the docks or in bonded warehouses may also be included. Sometimes invoices for goods are dated forward so as to lengthen, for the benefit of the buyer, the period during which credit is given, or certain scales of discount are operative. In such cases it is necessary to see that the invoices are brought into the books on the actual and not the paper dates.

Exceptionally, goods may have to be purchased free on cart or rail at seller's works, or at a forwarding station or wharf. In such cases the cost of delivery should be added to the purchasing price of the goods, and the invoice and freight note treated as one document.

The result of the periodical survey of the stores (or
Result of stock-taking. Stock-taking) would under this system agree not only with the Stores Ledger in regard to the particular classes of materials, but should also agree collectively with the Stores Account in the

Commercial Ledger. This is a matter of paramount importance in securing accuracy in factory accounts, and in removing one of the principal elements of uncertainty in a balance-sheet.

So far we have only traced the records it is advisable to make in connection with the purchase and receipt of materials. We have now to consider the routine appertaining to the withdrawal of material from store for the manufacture of stock, for the running or upkeep of machinery and plant, or for any other purpose.

Consumption of materials.

The initiative in the expenditure of material for manufacturing purposes should take the form of an instruction from the principal or manager of the business to the manager of the works to make for stock the required commodities, and authorising the withdrawal from store, by the methods to be described, of such material as may be thought necessary for that purpose. The instruction would probably take a form such as that shown (Specimen No. 28), and might be with two counterfoils, or, by means of carbonised sheets, with two duplicates. In some cases the manufacture may in part be of a number of small and almost similar articles in large quantities, and the material used can only be worked up advantageously in the combination of parts or processes. In such a case, what may be described as generic Stock Orders are often issued by the management, one order covering a variety of similar articles. Standardised and interchangeable parts manufactured for stock as replacements are usually dealt with, as regards registration and routine, in the same way as Stock Orders for a complete article.

Before any order to manufacture is given it is advisable, as tending to produce greater economy in cost of production,

that the designer, draughtsman, or other person best acquainted with its processes and details, on a properly ruled and headed form, should estimate the probable cost that will be incurred in wages and materials and the time that different classes of machinery will be in use in the production of the articles in

Estimate to precede manufacture.

INSTRUCTION TO FOREMAN OF WORKS.—SPECIMEN No. 28.

Date _____	Date _____	Date _____
Stock Order No. ———	Stock Order No. ———	Stock Order No. ———
To _____	To _____	To Mr. _____
Particulars of Order. _____ _____ _____	Particulars of Order. _____ _____ _____	Please make for Stock to the above number the undermentioned articles, and for that purpose employ labour, and withdraw material from Store as per accompanying estimate, No. ——— _____ _____
Foreman _____		
Date of completion _____		

question. This estimate should be a minimum rather than a maximum one. The works manager or foreman should be supplied with a complete specification of all material and parts included in the estimate. The storekeeper should also be furnished with the same particulars, and should not, without special authority, issue more material for the order than is estimated. There is always a tendency for more time and material to be spent in manufacture than are absolutely necessary, and the probability is that when once a surplus

The foreman having received instructions to proceed with the manufacture, should draw upon the storekeeper for material to the estimated extent by means of a

STORES WARRANT.—SPECIMEN No. 20.

[illegible]**Stores
Warrant.**

In some factories, save in cases of emergency, the Store is open for distribution for certain periods at certain hours.

only. In other factories stores are issued on warrants signed by the workmen, the foreman countersigning them at the Store in the course of the day on which the material is issued.

The storekeeper should enter all materials issued by him in compliance with warrants, in the Stores Issued Book (Specimen No. 30), which in due course is posted in the Stores Ledger to the credit of the respective accounts.

STORES ISSUED BOOK.—SPECIMEN NO. 30.

[illegible]

Some little difficulty may be experienced both by the storekeeper and the clerk keeping the Cost Books referred to in a following chapter, unless some arrangement is made by which all warrants are numbered consecutively. When they all emanate from one centre they may be consecutively typed in the books when printed, but when they emanate from foremen of several departments or leading hands in various shops, it will be found advantageous for the storekeeper to be provided with a numbering machine, with which to type number all warrants as they reach him. The warrants from the different shops or departments may be printed on differently tinted papers.

All labour and material expended in manufacture of

goods should be booked to the Number appearing on the **Stock Order Nos.** order given by the principal, for convenience called the Stock Number, to distinguish it from the Working Number hereafter referred to. Working Numbers are those assigned for recording the recurring and general costs of the factory, the maintenance and upkeep of plant, machinery, and buildings, and any expenditure other than that incurred in manufacture for stock.

The Stores Warrant when entered in the Stores Issued Book, should be forwarded to the counting-house, where **Cost Book.** it finds its way into the Cost Book, and forms one of the constituents of the credit to the stores account in the Commercial Ledger. The Stores Warrants may be posted direct into the Cost Ledger, as will be shown in the next chapter, or it may in some cases be found desirable to post them in a Stores Journal under the respective Stock, Plant, or other orders, to be hereafter described, with the necessary information as to material, weight, number, rate, and cost fully entered therein, and to post the totals of these entries to the respective orders in the Cost Ledger every quarter or half year as may be considered the more serviceable. In such cases reference for details can, when desired, be made back from the Cost Ledger to the Stores Journal, and eventually to the Stores Warrant.

Before leaving the subject of the stores books, however, it is necessary to explain that materials returned to vendors **Stores Re-** are entered in a Stores Rejected Book (Spec-
jected Book. men No. 31), which, in its purpose, is co-extensive with the Stores Issued Book.

The entries in this book are based upon the credit notes received from the vendors for the goods returned.

STORES REJECTED BOOK.—SPECIMEN No. 31.

Date.	No. of Credit Note.	Returned to	Articles.	Dimensions.	No.	Weight.			Rate.	Amount.	Account to be Credited.	Stores Ledger Folio.
						Cwts.	Qrs.	Lbs.				

The storekeeper should on returning any goods to the vendors enter the transaction in the Stores Rejected Book, but leaving the spaces for the number and date of credit note, and the rate and value of the returns blank, until he has received through the counting-house the credit note from the vendors. The office is advised of the rejection of goods either by an entry on the invoice or by means of a Stores Sent Away form.

• This Stores Sent Away form may require registration in the counting-house in the same way as an invoice, and the book records will be similar. If it be thought inadvisable to open a credit note register, the notes may be registered in red ink in the Invoice Register Book and the words "credit note" might be added. The credit note may by means of an india-rubber stamp, bear references corresponding to those impressed on the invoices. Specimen ruling No. 27 will equally apply in this case, save in the titles of the books referred to, which would be:—

Registration of credit notes.

Credit Note Register No. ———

Stores Rejected Book Fol. ———

Goods Returned Outward Book Fol. ———

It will probably be found that in many cases a reference

to the Stores Requisition Book can be dispensed with on the credit note. If the rejections are at all numerous, owing to the nature of the business, or to the nature of the stores used in manufacture, it may perhaps be desirable not only for the storekeeper to keep a Stores Rejected Book, but to advise the office of defects in material by means of a Stores Rejected Note, and to send with it the original invoice duly cancelled. This note should specify the reason for

STORES DEBIT NOTE.—SPECIMEN No. 32.

No. —			No. —											
Sent into Store, —			Dept. — Entered in Shop Returns Book, fol. —											
19 .			Sent to and received by Storekeeper —, 19 .											
Article.	No. of Order.	Purpose.	No.	Article.	No. of Order.	Purpose.	No.	Weight.			Rate.	Amount.		
								Cwts.	Qrs.	Lbs.		£	s.	d.

rejection, either as regards non-compliance with terms of the order or quality of material. It is desirable that examination of stores should be made as promptly as possible after receipt, but that right of rejection should be reserved with regard to those Stores defects in which can only be observed when they are worked up, or worked upon.

In addition to the process of receiving, examining, and if need be, rejecting stores supplied by vendors, and of issuing material for manufacture, the store-keeper will

receive from the foremen or over-lookers material which has been drawn out in excess of the quantity required, or the scrap material from some manufacturing operation. It is not unusual for material drawn out of store in excess of requirements to remain in the factory, and be used for the next similar stock order, but this procedure is open to serious objection, and the desirability of sending the material back to the store with a Stores Debit Note (Specimen No. 32) cannot be too strongly urged. Not only does the direct return of material to store prevent waste or improper appropriation, but it conduces to the localisation

SHOP RETURNS BOOK.—SPECIMEN No. 33.

Date.	No. of Stores Debit Note.	Returned by	Articles.	Order No. or job for which Articles were with- drawn.	Dimen- sions.	No.	Weight.			Rate	Amount.			Stores Debit Notes.
							Cwts.	Qrs.	Lbs.		£	s.	d.	

of the cost of manufacture. If the surplus material is not so treated, the stock order, in respect of which it has been withdrawn, will appear at a higher cost than it should, while the work upon which such material is used without warrant will have the benefit without being charged. In either case the records of cost of production are fallacious, and loss may thus be incurred. In some cases in which rigid adherence to this rule involves great inconvenience and expense, it is sometimes allowed to transfer material from one shop to another by means of a Shop Transfer

Note, and at regular intervals to issue corresponding Stores Debit Notes and Stores Warrants.

The old material, or "Shop Sweepings," which cannot be credited to any particular Stock Order, should be returned to the stores with a Stores Debit Note crediting it to one or more of the series of numbers or standing orders allotted to maintenance of machinery. It is desirable to pass all salcable material through the stores in this manner whether it is sold forthwith, or remains till a quantity has accumulated, or prices have risen. In the case of the sale of all such material, it is usual to stipulate for payment when price is accepted, or before delivery. Material spoiled in working, or defective products or "wasters" should also be returned to, or passed through, the stores by means of a Stores Debit Note, the working or other order number should be credited with the full cost of the material and the work done on it, and the difference between such cost and the value of the product should be debited to a Complaint, Mistakes, Spoilt Work, or Waste account, which should be so analysed that each shop or department, and each employé who has contributed to the result may be reminded in due course of the cost of carelessness. In some trades, such as foundry and pottery, a certain percentage of defective products are a normal factor in production. In these instances the same procedure may be adopted, and will tend to prevent any increase in the percentage, and in some cases to reduce it, owing to detailed information leading to inquiries as to the cause or causes of the increase.*

* There is great variation in the mode of dealing with waste as an item of cost in Cotton and similar mills. Some of these methods are described in "Textile Manufacturing Costs" by Joel Harlen, *The Journal of Accountancy*, New York.

"The value in use of a bell with a flaw in it is very little; it can be used only as old metal, and therefore its price is only that of the old metal in it.

The Stores Debit Note having been posted by the storekeeper in a Shop Returns Book (Specimen No. 33), is forwarded to the counting-house, where it is dealt with as recording a factor in the cost, as will be explained in the following chapter.

The entries in the Shop Returns Book are (as shown in the Diagram II.) posted to the Dr. side of the Stores Ledger.

There is another source from which a storekeeper may receive goods, viz., from the warehouse of the firm. These cases are likely to be exceptional, and can be more fully and conveniently dealt with in the subsequent chapter on Stock. At present it suffices to say that as between the warehouseman in charge of the manufactured commodities or stock, and the storekeeper in charge of the raw material of trade or stores the departmental adjustments of accounts, are made by means of a Transfer Book. The nature of this book will be explained later, and it is necessary to anticipate the subject at this stage to the extent only of stating that so far as the storekeeper is concerned, the items in the Transfer Book are posted in the Stores Ledger to the Dr. side of the respective accounts in the same way as other receipts of material.

Sometimes the storekeeper may have sent into store material which has been recovered from plant and buildings, or parts of machinery which is no longer serviceable. In these cases the stores accounts will be debited in the usual manner, by means of a Plant Recovered Note. These

When it was being cast the same trouble and expense was incurred for it as for other bells which turned out sound. Its expenses of production were the same as those of sound bells; but they have good value in use, and are therefore sold at a high price. The price of each particular bell is limited by its value in use. What the law of Normal Value states is that the price of cracked bells and sound bells together must, in the long run, cover the expense of making bells." Professor Alfred Marshall, "Economics of Industry."

transactions in relation to the machinery and capital account of the business will be dealt with in the chapters on Fixed Capital and Machinery Use (Chapters VI. and VII.).

Diagram II. gives a complete view of the books and forms mentioned in this chapter, and their connection with each other, and we would refer to the remarks in the Introductory Chapter to the effect that the books are suggested more for the purpose of showing what the transactions are than as giving stereotyped forms applicable to every case without modification. It will be manifest that, provided the principles are not lost sight of, there is every scope for further division, or greater concentration, as may be required.

The procedure referred to in this chapter, as well as other chapters in this book, is in principle, and with but slight modification in practice, applicable to ascertaining and recording the cost of continuous processes, per ton, per thousand feet, or other unit of weight or measurement. In some trades two or more qualities of the same article, or residual, or bye-products may be produced at the same time. In such cases all items of cost that are directly incurred in connection with a particular product should be so allocated, whilst items, like motive power, of which the direct incidence is not known, when their use cannot be localised, can be distributed over the various products on a percentage basis, the scale on which such percentage is based generally having the time taken by the various products as the main factor.

It is desirable that, as far as can be done, bye-products should be treated as distinct branches of the business, so that the cost of, and the return from, the prime or original product shall be ascertained with the maximum accuracy obtainable.

CHAPTER IV.

PRIME COST AND THE COST LEDGER.

IN the two preceding chapters we have dealt with the routine appertaining to the payment of wages and to the receipt and issue of material. We now propose to indicate the manner in which these two so far independent factors may be united, with the view of obtaining a record of prime cost, and with the inclusion of other items of expenditure, as described in succeeding chapter, the cost of production may be ascertained.

As we shall deal with the distribution of commodities in a following chapter, we do not here refer to the question of stock, except in so far as it has a bearing upon the question of stores and cost of production generally. It is well, however, at the outset to explain that, so far as the manufacture of commodities is concerned, we regard it as axiomatic that all articles, whether produced in pursuance of an order received from outside or in anticipation of future demand, should be booked as if they were intended to constitute part of the standing stock in trade.

This method of describing as stock all articles manufactured necessarily involves a clear distinction being drawn between material used in manufacture, and the manufactured article which is the product of the expenditure of labour, machinery and material, or in other words between stores and stock. The utility may not at once be apparent of passing through

Recapitulation.

Distinction, between stock and stores.

the Stock Books, as distinguished from the Stores Books, commodities manufactured to supply a definite order, and which are not likely to form part either of the normal, or of the exceptional stock in hand of the business, but it will be evident that there is a distinct advantage in treating all orders to manufacture in the same way, whether they be of a special or of a standard nature. Confusion necessarily arises if part of an order for articles made in the factory is treated as if supplied from stock, and another part as if supplied from stores. We recommend therefore that all material and parts required for purposes of manufacture should be withdrawn from store and charged to their proper stock orders. If the article has in reality been manufactured in execution of a customer's order, it should be withdrawn from the warehouse, and credited to the stock accounts, by the process described. The importance of uniformity in the treatment of the orders to manufacture is particularly exemplified when the cost of any article which has not previously been made, or made only to a very limited extent, is to be taken as the basis of calculations for more extensive transactions. A simple illustration will make our meaning clear. If a customer orders a suite of furniture to be made, we maintain that, instead of the expense of executing that order being debited to one account, the several pieces making up the suite should be made to separate stock orders. In this way, while the cost of each individual piece would be known, the cost of the suite would be ascertainable by aggregating the costs of all the pieces, whereas, if the whole of the labour and material required for the production of the complete suite had been indiscriminately charged to one account, it would be difficult to determine the cost of any one piece, should it be required to be replaced or to be manufactured more

extensively. It is well to exclude all probable sources of error, and this is largely promoted by clearly recognising the distinction we have drawn between materials and manufactured goods.

It having been decided to manufacture certain commodities, the instruction referred to in the preceding chapter (Specimen No. 28) will be issued. One part of the form will convey to the manager or foreman instructions to manufacture; the other is for the use of the clerk keeping the Cost Ledger, and will be taken by him as an advice of what orders are in hand and as a guide to the folios to be reserved for such orders in his Ledger. The counterfoil, to which the forms can be attached upon the completion of the order, will be retained by the principal.

It is important not only to know the cost of each individual article produced, but equally so to ascertain the cost of any particular part, or of any particular process of manufacture. Localisation of cost should be carried as far as possible, so that the varying rates of realisable profit on parts may be known, and the pressure to minimise cost of production be applied in the right direction. The tendency to the specialisation of labour has grown, and is growing, with the extension of the factory system and the use of machinery, and the economy thereby induced can only be rendered thoroughly effective by a complete analysis of cost. As a well-known writer on this subject has said, "One of the first advantages which suggests itself as likely to arise from a correct analysis of the expense of the several processes of any manufacture is the indication which it would furnish of the course in which improvement should be directed. If any method could be contrived of diminishing by one-fourth

**Initiatory
stage of
manufac-
ture.**

**Cost of each
separate
process.**

the time required for fixing on the heads of pins, the expense of making them would be reduced about thirteen percent. ; whilst a reduction of one-half the time employed in spinning the coil of wire out of which the heads are cut, would scarcely make any sensible difference in the cost of manufacturing the whole article. It is therefore obvious that the attention would be much more advantageously directed to shortening the former than the latter process." *

The fact that since this passage was written the process of manufacturing pins has been shortened and cheapened in the way referred to, serves to bring into clear relief the truth of the principles enunciated by the writer.

A similar change has taken place in the production and in the cost of matches. In an article in *Engineering* it was pointed out that the introduction of machine methods had decreased the cost of manufacture to one-eighth the cost in 1844. In the machine process there are ten operations against four by hand, machines being used to cut the wood into splints, to place them in the dipping frame, to dip them in the sulphur and composition, and to remove them from the frame, and even to put them into boxes. All these operations are done for 1,440,000 matches in less than eight hours, and then the packing done by six females takes twenty-one hours forty-two minutes. Obviously, says *Engineering*, a packing machine was needed, for of the labour cost for making the matches—about 1s. per 100,000—9d. went for packing and only 3d. for the actual work of manufacture. The cost of making the matches by hand was, in 1844, about 7s. 6d. per 100,000, or nearly eight times more.

* "On the Economy of Machinery and Manufactures," by Charles Babbage, 4th edition. London: John Murray.

A description, from a politico-economical point of view, of the advantages arising out of the division of labour does not fall within the scope of this treatise. These advantages have been ably expounded by Mr. Babbage by Professor Alfred Marshall and Mary Paley Marshall, and other writers.*

The principles applied in these pages to recording the cost of production of any article are equally applicable to recording the cost of any or all of the parts of that article. Either subsidiary stock orders numbered consecutively may be passed, or the stock orders for parts may be denoted by the number of the original stock order and a letter of the alphabet. Upon the completion of all the component parts, the accounts in the Cost Ledger of the various stock orders could be grouped, so as to constitute in the aggregate the cost of the complete article.

For the purpose of booking the expenditure upon small parts with the minimum amount of labour a nomenclature enabling every detail to be accurately and concisely defined by a symbol is exceedingly desirable. It would, on account of the labour involved, be an obstacle to the attainment of the object in view if the size, purpose, and relative position of every separate piece had to be expressed in ordinary language. We reproduce, therefore, a paper by Mr. Oberlin Smith,† in which is suggested a symbolic nomenclature of the kind required, if the system of taking out cost is to be applied to small parts, as is especially desirable where such parts are standardised and interchangeable.

As all labour and material are not directly spent in the manufacture of articles, but are partly devoted to the

* "The Economics of Industry," by Alfred Marshall and Mary Paley Marshall. London: Macmillan.

† See Appendix A.

maintenance, repair, or renewal of buildings, machinery, and plant, and to other objects, it becomes necessary to record the expenditure upon the subsidiary purposes, and to provide for its distribution over the various manufacturing operations or orders.

Expenditure other than for manufacturing purposes.

Whilst the cost of setting tools and machinery to perform certain operations may be charged directly to the stock order on which the expenditure is incurred, labour or material spent in the erection of additional, or the maintenance, repair, and renewal of existing machinery, cannot be apportioned with the same precision to any particular stock order, as the cost of the use of machinery is the product of many variable factors. The considerations which should determine the amount to be debited to any stock order on this account will be most conveniently referred to, and considered in connection with the question of the charges to be made for the use of machinery, in Chapter VII. Another direction of expenditure lies in the maintenance, repair, and renewal, extension, or erection of workshops, warehouses, stores, and other buildings. All such expenditure may be recorded under general or various sub-headings in the Cost Ledger, or preferably in separate Plant and Buildings Ledgers. The utility of these separate ledgers will be more apparent after a perusal of the chapter already referred to. So as to insure the maximum amount of localisation of cost, the recurring items in the maintenance of machinery and buildings, and the renewal and replacement of tools may receive a distinctive series of numbers or standing orders, and thus the cost for each floor, or wing of a building, may be ascertained. For expenditure on such recurring items, the manager of the works may

Localisation of maintenance expenses.

A description, from a politico-economical point of view, of the advantages arising out of the division of labour does not fall within the scope of this treatise. These advantages have been ably expounded by Mr. Babbage by Professor Alfred Marshall and Mary Paley Marshall, and other writers.*

The principles applied in these pages to recording the cost of production of any article are equally applicable to recording the cost of any or all of the parts of that article. Either subsidiary stock orders numbered consecutively may be passed, or the stock orders for parts may be denoted by the number of the original stock order and a letter of the alphabet. Upon the completion of all the component parts, the accounts in the Cost Ledger of the various stock orders could be grouped, so as to constitute in the aggregate the cost of the complete article.

For the purpose of booking the expenditure upon small parts with the minimum amount of labour a nomenclature enabling every detail to be accurately and concisely defined by a symbol is exceedingly desirable. It would, on account of the labour involved, be an obstacle to the attainment of the object in view if the size, purpose, and relative position of every separate piece had to be expressed in ordinary language. We reproduce, therefore, a paper by Mr. Oberlin Smith,† in which is suggested a symbolic nomenclature of the kind required, if the system of taking out cost is to be applied to small parts, as is especially desirable where such parts are standardised and interchangeable.

As all labour and material are not directly spent in the manufacture of articles, but are partly devoted to the

* "The Economics of Industry," by Alfred Marshall and Mary Paley Marshall. London: Macmillan.

† See Appendix A.

the distribution of stores, in keeping time records, or in any similar work, may be recorded either under a special

heading for General Charges in the Cost Ledger, or in a Factory General Charges Book.

**Factory
general
charges.**

In some cases the whole of the expenses of the Stores Department are charged off by a loading or percentage commission being charged on the price of the stores. It has also been suggested that the discount obtained on the purchase of goods should be placed against the expenses of the Stores Department, but in this connection it should be remembered that the benefit of trade or scale discounts would thus not be accurately recorded in the accounts. As will be explained in a subsequent paragraph, the factory general expenses may be summarised at any period for the purpose of distributing their incidence and a ratio established between them and the total amount of the wages expended on the various orders during the same period.

We are now able to consider the functions of the Cost Ledger in which the prime cost of any manufactured

article is aggregated and recorded, with a view of obtaining the cost of production.

This book is often in the form of the loose leaf or perpetual ledger, which by the facility it gives for separation of, and reference to, accounts without sacrifice of security, has more manifest advantages in the case of the Cost Ledger than in the case of the ordinary ledger. In it are summarised the allocation of wages spent on manufacture, alluded to in Chapter II., and the various warrants for stores used in manufacture, alluded to in Chapter III. In addition to these two channels of expenditure it will be observed that the Cost Ledger (Specimen No. 34) provides a column for machinery charges, arrived at on the principles set out in

COST LEDGER.—SPECIMEN No. 34.

Dr.	Particulars.	War. No.	Number or Weight.		Rate.	Prime Cost.		Machinery Use.	Disbursements.	Total.	Date.	Particulars.	Debit No.	Number or Weight.		Rate.	Amount.	
			No.	lbs.		Material.	Wages.							No.	lbs.		£	s. d.

the following chapters, and a column for sundry disbursements which are allocated to the respective working or stock orders, from the Petty Cash Book or its equivalent, or from any similar source. The items of sundry disbursements thus charged are of course debited to manufacturing account in the Commercial Ledger, a process which is facilitated by means of inserting in the Petty Cash Book a column showing the accounts to which the items in question are chargeable.

These records having been made, the clerk keeping the Cost Ledger will periodically draw out the total of his debits for the given period, under the various heads for the several items of wages, materials, machinery use, and miscellaneous disbursements. He will see that in the case of wages the total agrees with the amount of the wages account in the Commercial Ledger, which also coincides with the totals of the Wages Book for the corresponding

period. He will also see that in the case of materials his totals agree with the credits to the stores account in the Commercial Ledger for stores issued, cognisance being taken of the credits in the Cost Book ; the corresponding debits to stores represent the materials drawn out to a given number but not consumed on that job, and therefore returned to store, as explained later. In the case of

STOCK DEBIT NOTE.—SPECIMEN No. 35.

No. _____					No. _____									
Sent into warehouse 19					Sent to and received by warehouseman _____ 19									
					Stock Received Book folio _____									
Article.	No. of Order.	No. or Weight.			Article.	No. of Order.	No.	Weight.			Rate.	Amount.		
		No.	Cwts.	Qrs.	Lbs.			Cwts.	Qrs.	Lbs.		£	s.	d.

Sent into warehouse by _____ Received into warehouse by _____

Machinery Use, he will see that his total agrees with the total credit for the same period to Machinery Account as explained in Chapter VII. As regards petty cash, the totals should agree with the debit through the commercial books to sundry disbursements on manufacturing account.

Before explaining the credit side of the Cost Ledger it will be well to give a specimen of the form called a Stock Debit Note (Specimen No. 35), which is made out concurrently with the sending of commodities into stock.

This form, which may have a counterfoil, or be copied by mean of carbon sheets, emanates from the leading hand in the shop. The monetary column is filled in by the prime cost clerk from such data as he has in his Ledger, and the contents of the note are entered by him on the credit side

STOCK RECEIVED BOOK.—SPECIMEN No. 36.

Date.	No. of Stock Debit Note.	No. of Order.	Article.	Dimen- sions.	No.	Weight.			Rate.	£ s. d.			Stock Ledger folio.
						Cwts.	Qrs	Lbs.					

of that book. The warehouseman or other person in charge of the manufactured goods will, in his turn, make the necessary entry in the Stock Received Book (Specimen No. 36), which bears the same relation to stock that the Stores Received Book, explained in Chapter III., bears to stores.

The entries in the Stock Received Book are posted in the Stock Ledger (Specimen No. 37).

Besides the Stock Debit Note there are posted to the credit side of the Cost Ledger the credit notes (referred to in Chapter III.) for surplus or scrap raw material returned to the store.

By abstracting the credit side of the Cost Ledger periodically, it will be seen that it agrees with the amounts passed through the commercial books to the debit of stock account (and credit of stock orders account) for stock sent into warehouse, and with the debit to the stores account (also credited to stock orders

STOCK LEDGER.—SPECIMEN No. 37.														
Article.														
Received.							Issued.							
Dr.	Date.	Folio.	No. of Order.	Description.	No.	Weight.				Rate.	Amount.	Total.	Cr.	
						Tons.	Cwts.	Qrs.	Lbs.					
						</								

account) for surplus or scrap material returned from the workshops. The amounts standing to the debit of uncompleted stock orders in the Cost Ledgers will represent the value, *pro tanto*, of the goods in course of manufacture, and will agree with the balance on manufacturing account in the Commercial Ledger.

It is evident that unless the pricing of the Stock Debit Notes for articles

sent into the warehouse is deferred until

the whole of the order is completed, which would involve needless inconvenience in the event of any of the articles made to a Stock Order being appropriated to fill a Sales Order before completion of the whole, some element of error may enter into the calculations made by the cost clerk as to the cost at which the commodities are being manufactured. This contingency will only arise

where it is found inexpedient to proceed, concurrently with the manufacture of all the articles comprised under the Stock Order No. to which labour and material are being booked. That is to say, while all materials required for the manufacture of a given number of articles may have been withdrawn from store, it may be found necessary to complete and consign to the warehouse a smaller number of the articles first, instead of proceeding, *pari passu*, with the manufacture of all. But this difficulty is more apparent than real, inasmuch as any debit or credit balances which, upon completion of an order, may be found to exist, can be adjusted by the commodities last produced to that order being taken into stock at prices slightly reduced or increased to the extent of the difference; or the balance may, if preferred—and must necessarily if all the articles comprised in the Stock Order are disposed of—be at once carried to the debit or credit of trading account, or the sales account of any particular branch.

The total of the balances remaining on the various Stock Orders will of course represent at any given time the expenditure on work in progress at that date, whether in execution, or in anticipation, of a customer's orders. Further confirmation of the accuracy for balance sheet purposes of this compilation, may be obtained by the works manager being required to certify that he has in process work of the value shown on each order.

CHAPTER V.

INDIRECT OR INCIDENTAL EXPENSES AND THEIR ALLOCATION.

HAVING shown that all the direct channels of expenditure can be summarised in the Cost Ledger, it remains for us to show how the incidence of the shop expenses capable of direct apportionment, and the cost of factory superintendence, may, by means of a Cost Journal, be fairly distributed over the various manufacturing operations.

In 1887, when the first edition of this book appeared, the direct expenditure in wages and materials only was in many establishments considered to constitute the cost; and no attempt was made to allocate to the various working or stock orders any portion of the indirect expenses often referred to as Expenses, Fixed Charges, Oncost, Expense Burden, or Dead Expenses. Under this system the difference between the sum of the wages and materials expended on the articles and their selling price constituted the gross profit, which was carried in the aggregate to the credit of profit and loss, the indirect factory expenses already referred to, together with the establishment expenses, and an allowance for machinery and buildings under the general term depreciation, being particularised on the debit side of that account. This method had certainly

simplicity in its favour, but an efficient check upon the indirect expenses and accurate data for costing purposes can only be obtained by establishing a relation between the indirect and the direct expenses. This is done (1) by distributing all the indirect expenses such as wages of foremen, rent of factory, fuel, lighting, heating, and cleaning, etc. (but not the salaries of clerks, office rent, stationery and other establishment charges to be referred to later), over the various departments or shops specifically, and in turn distributing the departmental or shop totals over the various working and other orders as a percentage, either upon the wages expended upon the jobs respectively, or upon the cost of both wages and materials. If, for example, the aggregate wages expended in manufacture during the year amount to £10,000, and the materials consumed to £6,000, while the indirect factory expenses amount to £800, then if the latter are to be distributed in proportion to the wages paid, the cost of each job would be increased by 8 per cent. of the labour expended upon it; or if the indirect expenses are to be distributed in proportion to the first cost in wages and materials, each job would be increased 5 per cent. of the amount of its prime cost. In some cases (2) this shop "oncost" is distributed by two percentages, the one being based on the wages paid, the other on the value of the material used. In many undertakings it would prove a sounder method to charge the indirect expenses as a percentage upon the amount of the *direct wages*, and not upon the material, for the prices of some raw materials fluctuate so very widely that the other method described would render the cost comparisons of one year with another to some extent misleading.

In foundries these indirect expenses are as a matter of practice generally distributed in proportion to the weight

of the castings, and not on the wages. In this class of work there is not great variety in the material used, or large variation in the prices thereof, and the foregoing objection is thereby somewhat mitigated.

In referring to the allocation of factory expenses in proportion to the labour expended upon the articles manufactured, we have taken the *amount* of wages paid as one of the factors in the equation, but it is quite conceivable that the wages paid for skilled and for unskilled labour respectively may vary so largely as to make such an equation fallacious in particular cases, though quite correct in the aggregate; and that (3) a relation based upon the *time** during which the labour is employed, instead of upon the *amount* of the wages paid, would be more accurate. For instance, unskilled labour of a given amount is employed during a much longer period than skilled labour of the same cost, and it does not appear quite reasonable that it should bear only the same proportionate charge for superintendence, lighting, fuel, and similar expenses, the amount of which is greater or less according to the time the workmen are employed. In some cases this is met by ascertaining at the completion of each job the number of hours at individual rates of pay spent thereon, and charging for such number of hours an hourly "oncost" rate, estimated on a basis which will at

* "The true measure of economy must include a comparison of the value of the product with the cost of its production. But it must also include a comparison of the time taken to produce the result. . . . The economy of an industry must therefore be measured as a time rate. It is directly proportional to the value of the product, and inversely proportional to its cost, and to the time taken to make it, and to realise its value" (Prof. R. H. Smith on "The Measure of Industrial Economy," *Economic Journal*, March, 1906). In this article Professor Smith deals with three ways of bettering production—by increasing rate of production per time unit, by decreasing cost of production per time unit, by decreasing time spent in making and realising value of product.

balancing periods cover the cost of these charges. In dealing, in the first five editions of this book, with the question of the depreciation of plant, we described in some detail a method (4) of distributing the incidence of a charge for the use of plant over a variety of objects upon the time basis or machine rate, and stated that the method was equally applicable to the allocation of indirect expenses or Factory General Charges. Subsequent writers have followed up the suggestion, and worked it out in considerable detail as a proper means of distributing the expenses burden over production orders.

The charge for this use is on the basis of a machine hour rate. Each machine is debited with its direct cost of running and maintenance, as well as with its proportion of factory general charges, such as lighting, heating, and power. The charges so made to the Plant or Machinery Ledger (Chapter VII.) would correspondingly reduce the amount of factory general charges to be otherwise dealt with, and would permit of a more detailed analysis of cost. An accurate allocation of the cost of using machinery is as important as an accurate allocation of the cost of labour and material, and may often be the determining factor in deciding if hand labour or machine power is the cheaper instrument of production for some particular part or process. The utility of such records does not cease with the substitution of machine power for hand labour, as they show the comparative costs of the use of machines of different types or powers for the same or similar processes.

Before passing from the question of the allocation of shop "oncost," it may be mentioned that in some, but a diminishing number of cases, employers consider that sufficiently accurate results are obtained by taking the average rate paid for direct labour in each shop or department, and

by adding thereto such a percentage rate as would, over a series of transactions, equate the amount charged to the "oncost" account.

The item of Depreciation may, for the purpose of taking out the cost, simply be included in the category of the indirect expenses of the factory, and be distributed over the various enterprises in the same way as those expenses may be allocated; or it may be dealt with separately and more correctly in the manner already alluded to and fully described in the following chapter.

Depreciation.

A large proportion of the expenses of the drawing office can be charged to the various working orders, the statement of the work done in the drawing office and the time spent thereon sent at stated periods to the office by the chief draughtsman, forming the basis of the charge through the Cost Journal. The establishment expenses and interest on capital other than that invested in plant cannot, however, in practice, be considered as forming part of the cost of any particular article. There is no advantage in distributing these items over the various transactions or articles produced.* They do not

Establishment expenses.

* "When investing his capital in providing the means of carrying on an undertaking, the business man looks to being recouped by the price obtained for its various products; and he expects to be able, under normal conditions, to charge for each of them a sufficient price, that is, one which will not only cover the *special, direct, or prime cost*, but also bear its proper share of the general expenses of the business, and these we may call its *supplementary cost*. These two elements together make its total cost."—Professor Alfred Marshall, "Elements of Economics of Industry." Macmillan & Co.

Professor W. J. Ashley, M.A., Dean of Birmingham University, has kindly called our attention to the point that in the fifth edition of this work we seemed specifically to exclude Establishment Expenses and Interest as items in the cost of production. We take the opportunity presented by a new edition of stating our views on these points in somewhat greater detail, and thereby preventing the ambiguity to which the Professor alluded. He quite rightly

vary proportionately with the volume of business. A large increase in the value of orders received would not necessitate a like augmentation of the office staff, nor would a sudden and serious falling off in trade enable a firm to effect an immediate or proportionate reduction of general expenditure. The expense of selling and distributing or marketing is not part of the cost of manufacture. The establishment charges are, in the aggregate, more or less constant, while the manufacturing costs fluctuate with the cost of labour and the price of material. To distribute such charges over the articles manufactured would, therefore, have the effect of disproportionately reducing the cost of each, with every increase, and the reverse with every diminution, of business. Such a result is greatly to be deprecated as tending neither to economy of management nor to accuracy in estimating for contracts. The principals of a business acquainted with its details, including its costs, can

point out that these charges must be elements in the cost of production in the wider sense in which we use that term in other parts of the work, and that these economists also include them in that term. We did not mean to convey that Establishment Expenses and Interest were not elements in the cost of production of the aggregate of the commodities manufactured. What we desired to point out was that, from the commercial standpoint of a manufacturer desirous under competitive conditions of obtaining business data on which he could act as to the price of the product, Establishment Expenses, and in some measure Interest, would not be regarded as items in the cost of production of particular commodities in so far as it regulates price. The reason for this view is set out in the above text.

Interest on the capital invested in machinery is however, we think, properly and usefully chargeable for, and to, each machine, and thereby to the cost of the particular articles produced.

Karl Marx, not ineptly, described machinery as congealed labour. A distinctive feature of such labour is that it does not give all its output at once, but requires time for the utilisation of its advantages. The element of cost in time in these cases creates the interest charge, which must be included in Machine Cost, not only for costing purposes, but to enable proper comparison to be made as to relative cost of machine and manual labour for particular purposes.

always judge what percentage of gross profit upon cost is necessary to cover fixed establishment charges and interest on the capital used in the business other than that invested in machinery.

Owing to the diversity of methods of dealing with the matters under review, it has not been thought advisable to **Specimen** complicate the Cost Ledger (Specimen No. **Cost Ledger.** 34), by the addition of one or more columns to meet the requirements of any particular mode of allocating the indirect expenses, especially as no difficulty will be experienced in adapting the book to suit any system of taking out the cost that may be decided upon, provided the methods of booking the cost of labour and material, which are described in the previous chapters, be adhered to. In many cases, however, it will suffice simply to enter the percentages of indirect factory expenses and depreciation at the end of each account in the Cost Ledger. In the consideration of this matter it has to be borne in mind that in many cases there is a point in manufacture, or in some of the processes of manufacture, at which increase of work means increased cost of product in consequence of the need of resorting to overtime or to over-pressure, or to many other causes, or owing to the need of augmenting machinery with insufficiency of work for the new plant.*

* Many of these are well set out by Mr. W. R. Hamilton, F.C.A., in a paper on "The Cost of Production in Relation to an Increasing Output." They are also referred to by Professor T. N. Carver in his article, "A Suggestion for a New Economic Arithmetic," who points out that in the United States the new "expert, called by some mischance the production engineer, is also an accountant, but is more than that. He is really a consulting economist. He is an accountant who knows, to begin with, the general economic principles which make for the greatest efficiency, and who can therefore so direct the accounting of the establishment as to find out whether each and every branch is returning its maximum profit. . . . He deals principally with the commonplace economic principles of marginal productivity and marginal cost."

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Departmental Transfer Book, which fulfils the same function between the various manufacturing departments as the Transfer Book already alluded to performs as between Stores and Stock. In such case the Cost Ledger would give in summarised form the aggregated cost in the various departments of the component parts manufactured, whilst the Departmental Cost Ledgers would give all such detail as might be required to elucidate any differences between actual and estimated costs of any process or part in any department. If in the Departmental Cost Ledgers the standing or establishment charges of the department are apportioned over the orders, transfers from one department to another of finished parts or worked up material will be on the basis of shop cost of production. If it be thought desirable that departmental transfers should be on a profit basis, the procedure with regard to Stock Orders as previously described is applicable. A profit basis may in some cases be necessary to kindle departmental emulation, but there is in its operation a latent risk of stock values being eventually increased to more than the aggregate cost of production in the different departments, and profits not yet realised by the sale of the article manufactured being to some extent anticipated. This risk may not, even in an extensive business, be a large one, unless the stocks at balancing periods show an increase as compared with corresponding periods. In such cases it may be desirable to open an Adjustment Account, recording the difference between prime cost and cost of production in the different manufacturing branches.

In the diagrams, as in the text, we have shown how the Cost Ledger converges into the General or Commercial Ledger. The detailed totals in the Cost Ledger or Ledgers can thus be taken in verification of the totals of the generic

accounts in the Commercial Ledger, or *vice versa*; as shown in Diagram No. 3. If it is thought desirable to apply the self-balancing principle, a "Cost Ledgers Account," or a Manufacturing Account, can be opened in the Commercial or General Ledger, and a "General Ledger Account," or Works Account, in the Cost Ledgers. These accounts, although having independent origin, would through the journal be found to balance each other, and each set of books would be self-contained and self-balanced. Diagram No. 4, an expansion of Diagram No. 3, shows the application of this principle.

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Inasmuch as the profit or loss of an undertaking for any period is not simply the difference between the receipts and expenditure during that period, nor, save in exceptional cases, the current value of plant the amount which has been paid for, or expended upon, it, the question of the depreciation of factories and of plant must be regarded as a matter of paramount importance in the determination of the lucrativeness or otherwise of a business, and in the valuation of properties. Many different views prevail as to the best way of dealing with these questions, and owing to trades and processes of manufacture varying widely it is impossible to lay down invariable rules. Questions as to the particular practice to be followed in any individual case must, to a large extent, be left to the judgment of those most intimately acquainted with the conditions of the business, for, as has been pointed out by Professor Marshall, "almost every trade has its own difficulties and its own customs connected with the task of valuing the capital that has been invested in a business, and of allowing for the depreciation which that capital has undergone from wear and tear, from the influence of the elements, from new inventions, and from changes in the course of trade. These two last causes may temporarily raise the value of some kinds of fixed capital, at the same time that they are lowering that of others. And people whose minds are cast in different moulds, or whose interests in the matter point in different directions, will often differ widely on the question what part of the expenditure required for adapting buildings and plant to changing conditions of trade, may be regarded as an investment of new capital, and what ought to be set down as charges incurred to balance depreciation, and treated as expenditure deducted from

**Deprecia-
tion.**

**Variety of
views on the
subject.**

the current receipts, before determining the net profits or true income earned by the business." *

Some examination of the fundamental principles to be observed in regard to charging up machinery costs and "writing off" is obligatory in considering the methods of ascertaining costs.

The question of maintenance is very closely associated with that of depreciation, which includes not only wear and tear, but other constituent causes, such as weather exposure, contributory to expired capital outlay. There are five main factors which enter into the determination of any

Exhaustive examination of subject impossible.

Five factors in the determination of depreciation.

rule for arriving at the deterioration which has taken place: 1st. The cost of an object, be it a building, machine, or other asset. This may be either the cost price or, in the case of the transfer of an established business, the estimated value of the object. 2nd. Its estimated tenure of life, regard being had to its functions and the conditions under which they are performed, including therein volume, character, and nature of work, the material on which it is employed, and the personal equation or care taken by operators or attendants in the care and management of machinery. 3rd. The extent and value of the renovation or restoration received by it from time to time. 4th. Its value in use, or its present earning power, relatively and comparatively, to other instruments of production used for similar purposes. 5th. Its residual value, either as scrap or as an implement which, though possibly applicable to other uses, is no longer fit for its original purpose. This residual is generally lower in proportion to original cost, if the plant or machine is specially constructed, than if it is fit for general use.

"The Principles of Economics." Alfred Marshall.

In an interesting lecture on "Works Accounting," by Mr. R. N. Barber, A.C.A., delivered before the Manchester Chartered Accountants Students' Society, on March 1, 1909, after quoting these five main factors, said, "To these five I would frequently add a sixth, obsolescence, unless it is intended to be included in (2) or (4). In some industries, there are peculiar forms of obsolescence that have nothing to do with the machinery itself. A change of taste or of fashion might completely destroy the demand for the particular commodity produced by a machine, or a rise in the price of raw material might have the same effect. Such possibility of obsolescence is entirely different to the fear of improved methods, etc. (the usual meaning of the term) which would have the different effect of cheapening production. Now any of these last five factors might materially alter the annual cost of two machines, of which the first factor, the capital outlay, was the same, and when it is further remembered that one machine in a shop might be, on the average, in use two or three times as long as another machine of the same cost, it will be realised how very different the charges should be to the various jobs on which they are employed."

The usual methods of dealing with depreciation include the yearly provision of—

- (1) A fixed sum.
- (2) A fixed percentage on the original value.
- (3) A fixed percentage on the diminished value.
- (4) A sum to cover repairs, renewals and depreciation.

Whatever rule is determined upon, it is important that it should be consistently adhered to for a term of years in order to avoid the accounts of particular years being treated abnormally, which, in the case of joint-stock companies, whose shares are

**Rule
adopted
should be
adhered to.**

constantly changing hands, would lead to much injustice being done to individual proprietors.

In many manufacturing businesses the rough-and-ready method is adopted of charging to capital, in addition to the original cost, the cost of all renewals, alterations, and extensions of buildings and machinery; and, without any allocation of machinery costs to the articles manufactured or produced, to debit profit and loss account in respect of depreciation with a percentage of the total amount in the Ledger under those heads. In few factories, however, could a general rate of depreciation produce accurate results. Rates of depreciation naturally vary with the class and character of the machinery and plant, and their life and residual value. The rates are based on the original cost, or on the yearly reducing balance of the account. In the latter event a higher percentage rate has necessarily to be used. The "Comparative Depreciation Tables," compiled by Mr. Lawrence R. Dicksee, set out the equivalent rates side by side, and in practice are of considerable use. In some cases even the current repairs are charged to capital, in which case a proportionately larger percentage should be written off annually for depreciation.

In some cases proprietors are content to charge their profit and loss account with an estimated fixed sum yearly for depreciation, and they include under this term repairs and renewals. The amount so charged they credit to a Depreciation Account or Fund, and debit the account with the amount expended in repairs and renewals.

The principle of an annual average charge is defensible on some grounds, but if applied to an account which includes such dissimilar factors as depreciation, renewals

and repairs, the ratio of the fixed amount applicable to depreciation will vary with the yearly increase or decrease in the amount actually spent on repairs and renewals. This would be obviated by keeping the Depreciation Fund and the Repairs and Renewals Fund separately. In the case of the latter fund, the cost of repairs and renewals will naturally be lighter in the earlier than in the latter years, and in these years a credit should be arising on the account, owing to the cost not amounting to the fixed sum charged. Unless repairs and renewals are wilfully postponed in order that the account may be kept in credit, the sufficiency of otherwise of the charge under normal conditions, and in the absence of any accident, will manifest itself in the credit balance in the fund.

In some undertakings no cognisance is taken of depreciation in the accounts. In the case of most railways, for instance, the deterioration of the plant is taken to be adequately and fairly provided for by the current expenditure upon repairs and renewals which is debited to revenue account. This practice is defended on the ground that by the very nature of railway property the repairs and renewals must be at least equivalent to the depreciation, and that an effectual check against any starving in maintenance is furnished by the certificates which the heads of the spending departments periodically give as to the condition of the permanent way, plant, tools, buildings and rolling stocks. Such a system may possibly prove unobjectionable when, an undertaking having been in operation for a number of years, a relation has been established between the expenditure and the deterioration ; but there is always a danger that during its earlier years, when expenditure for repairs, renewals, and extensions is not so imperatively called for as after some

years of working, the profit and loss account is not adequately debited with depreciation ; and even if this be done, there is nevertheless the risk of the accounts of particular years being prejudiced. It is doubtful, also, whether the desire to maintain dividends and to show an average expenditure per mile does not lead, in the case of railway companies, to only such work being done during the half year as will approximately cost the average amount. In the case of water companies likewise, the item

**Case of
water com-
panies.**

of depreciation forms no part of the accounts. But water companies are allowed by Act of Parliament to place to a reserve fund surplus profits to the extent of one-tenth of the capital, and as renewals are paid for out of profits, it follows that any abnormal charges in respect of deterioration are indirectly met out of this reserve fund ; consequently during the first years of working, when renewals and repairs are insignificant, and no reserve fund has been formed, there is a tendency to relieve revenue account of its fair proportion of charge for wear and tear. In general, it may be stated that unless considerable additions and extensions are constantly made, the system of charging all repairs and renewals to revenue, but making no allowance for depreciation, will not in the long run prove satisfactory. Unless adequate provision is made a time must arrive when, owing to some of the machines and tools having become wholly obsolete, or the lease of buildings having expired, an amount will have to be debited to Profit and Loss which should in strictness have been borne by

**Distribution
of depreciation
over life
of object.**

previous years. In this way some years are made to appear unduly lucrative at the expense of others, instead of the depreciation being charged equally over the number of years constituting the life of the object, in direct proportion, if possible, to the

actual deterioration incurred in each period. This is always at least approximately possible. In certain cases

Only in certain cases that maintenance balances depreciation.

only can maintenance be said to balance depreciation. "In any particular building, machine, or appurtenance, decay or wear of some sort must take place in the course of time, and repairs, in order to compensate fully for the decline in value, must take the form of renewal. This being the case, the absolute replacement of some portion of the plant every year may thus maintain an average aggregate value. In only two kinds or classes of plant, however, can such an exact balancing of loss by repairs and renewals be ventured on; one, where the plant wears out so quickly as to need replacement at short intervals, affording constant proof, by the mere continuance of working, that not only the earning power of the factory is maintained, but also the capital value; and in a second class, that of undertakings so large and permanent as to afford a wide average of deterioration and renewal over the whole plant." * It is worthy of note, that even in the two cases referred to Mr. Matheson speaks with some hesitancy, and alludes to such a mode of procedure as a venture. There is the certainty of plant deteriorating in time, and always the risk of plant gradually becoming obsolete, even though kept in good repair.

In some instances the amount charged to revenue account for depreciation is a fixed sum, often arrived at by charging an equal proportion of the cost against each year of the working life of the object, or by an arbitrary percentage on the book value, or by way of a constant percentage fixed at a rate calculated to reduce the asset to its residual value

* "The Depreciation of Factories, and their Valuation." Matheson. London. Spon.

in a prescribed term. In others it varies according to the business effected, or to the balance remaining to profit and loss account, or is regulated by the desire of the firm or its managers, either on the one hand to show a large profit, or on the other to add to the stability of the concern. In comparatively few establishments, however, is the endeavour made to systematically approximate the amount charged to revenue for depreciation, to the actual deterioration which has taken place, and still more rarely is it attempted, when the actual depreciation has been ascertained, to allocate it to the various departments in which it has been incurred, or more accurately, to the various operations which have been carried on.

Other methods in vogue.

Only rarely that actual deterioration is charged.

Periodical valuation the direct method.

Disadvantages of this method.

appear to be by means of a revaluation of all the properties at periodical times. In the case of trades in which the wear and tear of plant is proportionate to the work done this course would have the advantage of charging fairly the deterioration due respectively to a period of brisk trade and to a time of depression, by manifesting in the former period a greater degree of wear and tear due to a larger volume of business, or to time contracts compelling a resort to overtime; while in periods of depression a smaller amount would obviously be chargeable for depreciation, much of the machinery and plant having probably stood idle. But this method would in the majority of trades lead to such enormous fluctuations in the profit and loss account, especially if the periodical valuation was based upon the market price of the assets taken singly, and not simply upon their value as integral portions of a "going

concern," that, except in a few trades, it would be impracticable. This would especially be the case when raw material, subject to market fluctuations, formed a large proportion of the plant and stock in-trade. Such a method as an annual practice would often be a fruitful source of confusion and error, although of great benefit if taken at five or seven years' periods, or on some special occasions such as the sale of the business. In short, to write off

To write off only manifest deterioration fallacious.

only such portion of the cost of the plant as represents the apparent deterioration that has taken place would be fallacious. Although machinery or plant may show no signs of diminished value or loss of earning power, yet its term of life and its value in the market must be lessened by lapse of time. A periodical survey of all buildings, plant, etc., is, however, very important, and would serve, if no other purpose, as a very valuable check upon the system of calculating depreciation that may be adopted.

Moreover, a periodical valuation of the assets, as the basis of a depreciation rate, raises considerations of very great significance, such as the question of the inter-

Profit and loss on capital.

dependence of the revenue and capital accounts, and the question of how far a loss or profit on capital account, *i.e.*, a diminution or increase in the realisable value of any of the assets, should affect the profit and loss account. These are points of considerable interest, and deserve to be discussed to a greater extent than the limits of this work will permit. The following observations by a leading authority on the law relating to joint-stock companies are, however, very apposite :—

"Capital may be lost in either one of two ways, which may be distinguished as loss on capital account, and loss on revenue account. If a ship-owning company's capital be

represented by ten ships with which it trades, and one is totally lost and is uninsured, such a loss would be what is

here called a loss on capital account. But if the same company begins the year with the ten ships, value say £100,000, and ends the year

with the same ten ships, and the result of the trading, after allowing for depreciation of the ships, is a loss of £1000, this would be what is here called a loss on revenue account.

“Where a loss on revenue account has been sustained, there is of course no profit until that loss has been made good either by set-off of previous undivided profits still in hand, or by profits subsequently earned. But until the case of Neuchatel Asphalte Company the question was open whether a company under the Companies Acts, which has lost part of its capital by loss on capital account, can continue to pay dividends until the lost capital has been made good.

“That case showed the true principle to be, that capital account and revenue account are distinct accounts, and that for the purpose of determining profits you must disregard accretions to or diminution of capital. Suppose I buy £100 Consols, at 97, and at the expiration of a year they have fallen to 94, is my income £3 or nothing? If nothing, then if at the expiration of the year they had risen to par, my income would by parity of reasoning have been £6, not £3. Is the result affected by the question whether at the end of the year I am or am not about to sell my Consols? Suppose a tramway company lays its line when materials and labour are both dear, both subsequently fall, and the same line could be laid for half the money, and as an asset (independent of deterioration from wear) would cost for construction only half what it did cost. Is the company to make this good to capital before it pays further dividend?

If so, then if the cost of materials and labour had risen after the line was laid might not the company have divided as dividend this accretion to capital? Upon such a principle dividends would vary enormously, and sometimes inversely to the actual profit of the concern.

"If revenue account be treated as a distinct account, these difficulties disappear, and subject to the difficulty which must be encountered of discriminating between revenue charges and capital charges, a safe and intelligible principle is arrived at. The creditors of the company are entitled to have the capital account fairly and properly kept; but they are not entitled to have losses of capital on capital account made good out of revenue. It is no doubt true, that before arriving at revenue at all there are payments which must be made good to capital, on account of capital wasted or lost in earning the revenue. For instance, in the common case of leaseholds, which are a wasting property, the whole of the rental will not properly be income; in the case of colliery properties, the difference between the price at which the coal is sold, and the cost of working and raising it, will not all be income, for there must also be a deduction made in favour of capital representing the diminished value of the mine by reason of its containing so many less tons of coal; in the case of a tramway company, you will not have arrived at net profit before you have set apart a sum to make good deterioration. But when all proper allowances have thus been made in favour of capital, the balance is revenue applicable for payment of dividend." *

* "The Law and Practice under the Companies Acts." H. Burton Buckley. London: Stevens and Haynes.

In some earlier cases, *e.g.* The Ebbw Vale Steel and Iron Co., Ltd., and *Dent v. London Tramways, Ltd.*, the extreme view that no profits were available for distribution until lost capital had been replaced, seems to have been taken.

The reports of the *Neuchâtel* case (C. A. 1889, 41 C. D. 1), show that the articles of association of the company expressly provided that it should not be necessary for the directors to provide for the waste of the assets before the declaration of a dividend.

In the case of *Bolton v. Natal Land and Colonisation Company* (C. D. December, 1891), the point to be decided by the Court was whether it was necessary to write down land to its true value before declaring a dividend, and it was held that a company may declare a dividend out of current profits without being obliged to show that its capital is intact. In *Verner v. The General Commercial and Investment Trust Ltd.* (1894, 2 C. 239), Lord Lindley drew a distinction between fixed and circulating capital, holding that depreciation of the former need not, but depreciation of the latter must, be charged to profit and loss.

In *Wilmer v. McNamara & Co., Ltd.* (Chancery, April, 1895), it was also held that a company cannot be restrained from declaring a dividend out of current profits, because no provision has been made for the depreciation of fixed assets.

In the case of *Bond v. The Barrow Haematite Steel Co., Ltd.*, money invested in land, mines, and furnaces which were abandoned was considered as circulating capital, analogous to buying ore in advance, and it was held that the directors did right in making good the loss out of profits.

The judgment in the case of *The National Bank of Wales v. Cory* does not run counter to these decisions; but the Lord Chancellor (Lord Halsbury) stated that he must decline to express an opinion not called for by the particular facts before the tribunal, and that when the question of whether dividends were properly paid came before the

Court, he foresaw that many matters would have to be considered by men of business, which were not altogether familiar to a court of law.

The question of payment of dividend out of capital surplus has been involved in two leading cases.

In *Lubbock v. The British Bank of South America, Ltd.* (2 Ch. D., April, 1892), it was held that if a company's articles of association so provide, a profit made on the sale of a part of the undertaking is available for dividend. In connection with this case, the important distinction between capital used in a concrete, and in an abstract sense as "capital values" should be pointed out. It was suggested that since the profit made was derived from concrete capital assets of the bank, it could not be distributed as income, but the decision of the Court showed that it was the statutory capital or capital values, and not concrete assets which had to be conserved, and provided the paid-up capital was represented by sufficient assets, there was no return of capital to the shareholders. In *Foster v. The New Trinidad Lake Asphalt Co., Ltd.* (C. D. November, 1900), it was held that an unexpected appreciation in the value of assets taken on by a company at its formation is not profit available for dividend, even though the asset in question be a book debt.

From these decisions it would seem that legally—

Fixed capital need not be maintained intact.

Dividends may be paid without providing for depreciation on fixed assets and despite loss of fixed capital.

Floating or circulating capital must be maintained intact.

Dividends cannot be paid before a loss on revenue is made good.

An analagous point arises in connection with assessments for rating purposes. Following the Cambridge Gas Co. case in 1838, many English Courts have for these purposes allowed deductions for depreciation, even where, as in the London, Brighton & South Coast Railway Co. case in 1851, sums have not been set aside in the accounts for depreciation.

A similar view has under like circumstances been taken in the courts of the United States. Thus, in a case which came before the Railway Commission of Wisconsin recently, the commissioners stated that depreciation may be described as an amount that must regularly be set aside to cover wear and tear in order to keep the original investment value. Depreciation was, the Commissioners decided, an operating expense that should ultimately be borne by consumers or users, and that when it is so borne it should be set aside until needed for the renewal of worn-out, or useless parts of the plant.

Morawetz, in his book on "Private Corporations," expresses a general view in stating that a large number of cases decided in the English and United States Courts, show that in determining whether a company is entitled to pay a dividend to its shareholders, the property acquired for permanent use in carrying on business may be valued at the price actually paid for it, although it could not be sold again except at a loss, even although the business of the company should prove less profitable than was anticipated and the value of the whole concern, and consequently the value of the shares, representing it, should greatly depreciate in actual value, it would not be necessary to accumulate the profits until the depreciation had been made up and the value of the shares again raised to par.

All that is required is, that the whole capital originally contributed by the shareholders shall be put into the business and kept there, that no part of it shall be taken out again, directly or indirectly, and given back to the shareholders.

While there are some cases which would seem to indicate that dividends may be declared even though the ordinary repairs have not been made to the plant, it seems to have been held by the majority of the Court decisions that so long as the actual things constituting the capital of the corporation be not paid out to the shareholders, and ordinary repairs are made so that the plant is kept in good working condition, dividends may be paid even though depreciation has not been taken care of.

We take it that the practical view must be that, if at a given period the realisable value of all properties, after liquidating all liabilities, is in excess of the amount

The practical view of the matter.

of subscribed capital, such surplus, whether the gain has been made on capital account or revenue account, constitutes profit; while the amount by which realisable assets fall short of the liabilities including the subscribed capital must be considered as loss. So long

Profit and loss account.

as a business is a going concern, it would probably be inadvisable for the revenue account to serve the purpose of an index of the fluctuations in the market value of the constant or fixed assets essential to the carrying on of the business, for in such a case the revenue account would oscillate perhaps from a large profit one year to a large loss in the next, although the nature, volume, or

Sinking fund.

lucrativeness of the current business may have remained without abnormal change. With a view to providing against an eventual loss in the realisation of an asset the value of which tends to decrease, it would

probably be judicious however to establish a sinking fund by debiting the revenue account annually with a fixed percentage to cover all contingencies. This would also apply to plant which is not worn out before it is replaced by improved machines. Similarly, if the asset is improving in

value we do not recommend that the increment
Reserve fund. should be placed to the credit of profit and loss account, but that it be debited to the account of that asset and credited to a reserve fund opened to provide for any future diminution in its market value. If there is a sinking fund, the amount might be placed to its credit.

Although it does not seem practicable to lay down a universal rule that a loss on capital must be made good before further dividends, if earned on profit and loss account, can be distributed, there are cases in which it is obviously necessary that this set-off should be made. In the case already referred to of the Shipping Company with ten ships, one of which is uninsured and is lost, inasmuch as the profit and loss account has not—from what must be assumed to be motives considered as economical—been charged with the cost of insurance, and the risk of loss has been undertaken, that account must as a consequence bear the loss when it is incurred. Thus the account named would bear the total loss of one ship and the depreciation of the re-

maining nine. Indeed, a loss which might have
Insurance against losses. been provided against by insurance, or one which underwriters will not insure except at a premium so high that the firm prefers incurring the risk to paying the cost of insurance, if not provided for by the creation of a reserve fund, is always a fair charge to profit and loss account. The question whether or not the properties of a firm are insured against fire has always to be considered in estimating the liabilities of a

concern, and the few notes in the Appendix on the law relating to Fire Insurance will probably not be considered out of place. There are many points connected with effecting an insurance, the non-observance of which may invalidate the policy, and by omitting to carefully examine the conditions of their fire policies a firm may find that when part of their buildings or stock has been destroyed by fire they are not entitled to indemnification by the insurers.

The Income Tax Acts also have an important bearing upon the depreciation and valuation of assets, and no method of dealing with large assets of fluctuating value should be decided on without due regard being had to the provisions of these Acts. Under them everything in the nature of property, which produces, or is capable of producing, or itself consists in, an annual income or revenue, is subject to income tax. It is not, however, in all cases necessary that a profit shall in any one year actually be made out of property, in order that its owner may become liable to the duty in that year. Under Schedule D dues are charged in respect of any trade, manufacture, adventure, or concern in the nature of trade not contained in any other schedule of the Act, and the duty is (save in a few exceptional cases) computed on a sum not less than the full amount of the balance of the profits or gains upon a fair and just average of three years.

Any increase in the value of an asset, if credited to profit and loss account, would be subject to assessment, but it by no means follows that the converse holds good, and that losses will be allowed. For this reason a firm may suffer appreciable loss, to the extent of the duty paid, by their profit and loss account reflecting the variations in the value of their assets. A firm may for one or more years, as a result of a general rise in prices, have realised large surpluses

on their properties, and although they may have paid full duties in respect of such gains, it is not certain that in the event of a reaction of prices, and their losing as much as they had gained, or more, such loss would be allowed to form a factor in the determination of the average profit. It is hard to say what is an allowable deduction from profit, inasmuch as the statutes for the most part define the term negatively by enumerating the deductions *not* allowed. In Appendix B will be found a synopsis of the sections of the Income Tax Acts bearing upon the matters here discussed.

CHAPTER VII.

MACHINERY USE.

HAVING dealt with the principles which necessitate charges for the use and depreciation of machinery being dealt with in the ascertainment of cost, we proceed with the consideration of methods enabling these charges to be allocated to the various processes or articles of manufacture. The procedure to be adopted with regard to lease redemption or amortisation does not call for lengthy consideration, but it is necessary to deal more fully with the charges for the use of machinery. These principles and their application were outlined for the first time in the first edition of this work, published in 1887. Since then special attention has been given by subsequent writers to this branch of the subject, and to them we are much indebted for valuable verification of the principles, and their detailed consideration of the best modes of applying the methods, we advocated. The extent to which in certain industries the use of machinery has supplanted or supplemented manual labour has strikingly manifested the need of considering mechanical labour or machinery use as an item of cost, to be ascertained in each manufacturing operation with as much detail, precision, and accuracy as the cost of labour and material.*

* "The enormous increase in the amount of capital permanently invested in manufacturing industries—"fixed capital," as it is called—correspondingly increases the "fixed charges" as an element in cost. Further, as machinery supplants labour a change takes place in the analysis of costs; the proportion

We then pointed out that the best way of arriving at a machinery hour-rate, which would include a provision for depreciation, was to take the life, that is the expectation of useful service, of a building or machine as the basis of the

**The life of
an object the
best basis.**

rate, modified by the other three factors, mentioned in the preceding chapter, viz., original cost plus interest, renovation, and residual value.

The method, however, is attended with some difficulties in the case of properties whose tenure, unlike that

**Difficulties
of this
method.**

of leases, is not well defined, and also in the case of a newly established business, to which the experience of other establishments has but little application. Should the nature of any particular business be

**Advantages
of this
method.**

such that the life of the appurtenances can be estimated with tolerable accuracy, this plan will be found to be the most scientific in its operation; for although the life of an asset may vary with the surrounding conditions, in the same way as the life of a horse depends, *ceteris paribus*, upon the character of the work it performs, yet, if once the life of an asset has been determined—and a manager of a business which has been established for a time should at least be able to frame an approximate estimate of the durability of the various implements he employs—there will be no difficulty in allocating the depreciation to the various processes. In

**Example of
the method.**

Appendix B the question of what allowances under the Income Tax Acts are permissible for depreciation and what may become permissible if the similarity in many cases between machine and manual labour is recognised, is dealt with in some detail, and should be borne in mind in the consideration of the subject.

of fixed charges, oncost, and expenses grows, and the proportion of wages to total cost diminishes."—John Mann, jun., M.A.C.A., on "Oncost or Expenses" in the "Encyclopædia of Accounting."

Leases for a definite number of years, or in perpetuity (leases renewable from time to time at the option of the lessee may be regarded as leases in perpetuity) afford a very appropriate illustration of the rule of basing the depreciation rate upon the life of the object.

**Leases
afford good
illustration.**

In Appendix E is reproduced a table recommended by Mr. Pixley,† which will be found useful in

calculating the amount to be set aside annually under what is known as the Fixed Instalment

**Amortisa-
tion table.**

system, to amortise a lease, and the table is also applicable to other properties, the life of which has been determined. Inasmuch as the table takes cognisance, and correctly so, of interest at the various rates shown, the Ledger account of the asset in question should be debited each year with interest at a given rate and credited with the corresponding amortisation rate shown in the table, until, at the expiration of the tenure of the lease or other object, the whole of the amount at which it stood in the books has been exhausted. The hypothetical Ledger account (Specimen No. 38) of a five years' lease from the time

Example. of its purchase to its expiration will serve to elucidate the table referred to. The purchase price of the lease is taken at £4500, and interest is calculated at 5 per cent. per annum, which is of course debited to the lease account, and credited to profit and loss account, a correspondingly larger amount being debited to that account in respect of amortisation.

The amount which is debited each year to profit and loss account by way of amortisation, is arrived at by dividing the amount of the purchase price, £4500, by 4·329, the latter being the number in the 5 per cent. column of the table on

† "Auditors' Duties and Responsibilities." By F. W. Pixley. London: Effingham Wilson.

LEDGER ACCOUNT, SHOWING THE AMORTISATION OF A FIVE YEARS' LEASE.

(See page 119.)

SPECIMEN No. 38.

DATE.	DR.	£	s	d.	DATE.	CR.	£	s	d.
Of purchase	To Cash, Purchase price . . .	4500	..	..	End of 1st Year	By Profit and Loss Depreciation . .	1039	10	..
End of 1st Year	To Interest at 5% . .	225	..	..		By Balance . .	3085	10	..
		4725	..	..			4725	..	..
End of 2nd Year	To Balance . .	3085	10	..	End of 2nd Year	By Profit and Loss . .	1039	10	..
	To Interest at 5% . .	184	5	6		By Balance . .	2830	5	6
		3869	15	6			3869	15	6
End of 3rd Year	To Balance . .	2830	5	6	End of 3rd Year	By Profit and Loss . .	1039	10	..
	To Interest at 5% . .	141	10	3		By Balance . .	1932	5	9
		2971	15	9			2971	15	9
End of 4th Year	To Balance . .	1932	5	9	End of 4th Year	By Profit and Loss . .	1039	10	..
	To Interest at 5% . .	96	12	3		By Balance . .	989	8	..
		2028	18	..			2028	18	..
End of 5th Year	To Balance . .	989	8	..	End of 5th Year	By Profit and Loss . .	1038	17	4
	To Interest at 5% . .	49	9	4			1038	17	4
		£1038	17	4			£1038	17	4

the line corresponding to five years, that being the number of years over which the amortisation is to extend, and crediting the account each year with the amount so written off.

This procedure involves the charging against profits of a sum which will not be represented by any payment until the expiry of the lease, when the accumulated fund may be required for renewal purposes. The sums charged meanwhile, will either have been utilised as working capital, or placed on deposit, or invested in securities, the interest return in the last two cases probably being small in comparison to that which would accrue from the first-mentioned course being adopted.

It has been urged with justification that, so far as a depreciating or wasting asset is concerned, the "Annuity" system should be employed for the purpose of deciding whether it is more advantageous to expend capital in one direction than in another. The procedure adopted under this system is to set aside annually an amount which will write off the amount of capital originally sunk, plus interest thereon, during the time it remains sunk in the asset. As the amount of capital is in course of reduction each year, the interest credited to Revenue becomes less each year, but it is urged that in practice this reduction is in large measure, if not altogether, compensated for by the greater earning power of the accumulated instalments, if used in the working capital of the business. The "Annuity" system as compared with the "Fixed Instalment" system lightens the earlier years of amortisation, but necessitates heavier charges in later years, and involves in addition a heavier average charge.

Where the life of the asset, be it leasehold or other property, is of long duration, the more economical course is by insurance or otherwise, to invest annually such a sum

as will with the aid of compound interest accumulate to the amount of the original capital expenditure at the end of the life or lease. If the investment be as by way of an insurance policy, no question would arise as to provision against fall in values of the securities in which the sinking funds were invested. That such question may be one of great importance is shown by calculations made in 1909 by the City Registrar of Glasgow, that if the corporation had invested its sinking funds year by year in Consols for the last twenty years, the loss at prices current at the time the calculation was made would have amounted to £500,000.

The question of the liabilities of lessees for dilapidation and waste of premises calls for some consideration in reference to the matters here referred to. If, under the conditions of the lease, dilapidations require to be made good upon its expiration, provision for the necessary outlays should periodically be made, preferably through a sinking fund. A convenient summary in tabulated form of the law relating to dilapidations will be found in Mr. Fletcher's book on the subject.*

In many businesses it may be found advisable, for the purpose of estimating depreciation, to divide the objects into classes, for although the general result of the business operations during a given time may be normal, yet by dealing separately with the depreciation of each class of appurtenances it may be found that some of the departments show abnormal results. A general rate of depreciation may lead principals to neglect what, comparatively, may be more profitable operations; or to push a department of the business which, if it bore its full proportion of depreciation, would yield less than the average rate of profit.

**Dilapida-
tions.**

**Classifica-
tion of
assets.**

* "Dilapidations." Banister Fletcher. London: Batsford.

This separation of departments is the more desirable as the same method of allocation will obviously not apply to *loose* plant and tools and to plant and tools which are fixed.

**Fixed plant
and loose
plant.**

Although it is theoretically possible to frame a scheme which would enable the cost of the loose plant and tools to be allocated to the various working orders, generally it would in practice be found not worth while to carry it out. The cost of these tools, even in a large establishment, is comparatively small, and under ordinary circumstances the depreciation of loose plant, tools, and patterns so slight on any one working order that it simply suffices to book all these implements out to a loose tools and plant account for each shop or department. In many cases it is usual at the end of the year to allocate this account to profit and loss, and in others, to make an inventory of the tools and their value at that period, and to write off to profit and loss account through a shop expenses or similar account a proportion, often 25 to 35 per cent., of the total of the book value of the loose tools and plant in use. It is evident that, if desired, some percentage ratio could be established between this loose tools and plant account and the amount spent on wages, and thereby the cost be allocated to any given working number; or the loose plant and tools might be re-valued annually, the difference in value being carried to profit and loss, and the cost of their repair during the year charged direct to profit and loss account. In either of these cases the amount charged to profit and loss could be allocated in common with the indirect factory expenses as a percentage upon wages as explained in the chapter on the allocation of indirect or incidental expenses. That there may be a more effective check on the cost of tools, and to aid in the

time, recording the contents. The value of the loose tools in the shops will not, under normal circumstances, vary very widely at stock-taking periods, and any large mistake should be discovered by comparison. If the store system suggested in previous chapters is adopted, the mistake of loose plant being sometimes included in the stores surveys cannot arise, and thus at times, when the loose plant is either not surveyed or incorrectly appraised, unduly increasing the profit earned.

The same methods are applicable to the patterns account, save that it may be desirable to place a heavier depreciation rate on some patterns or moulds than on others, as a provision against their becoming obsolete. Patterns made for a special order, which is not likely to be repeated, or repeated only after a considerable interval, should be taken at a merely nominal value, and the balance of the amount spent on them should be transferred to the stock order, for the execution of which the patterns were made. In the valuation of patented patterns, it must be remembered that the special value is in the patent, and not in the material of which the pattern is made. The rates of depreciation on patterns will vary very widely, and it is desirable that, as far as can be done, the patterns should be classified.

With fixed plant and machinery the case is different. Each distinctive object should be numbered, and its value, together with a description of the machine, a record of its loose parts, and the name of the supplier, be entered in a Machinery or Plant Ledger (Specimen No. 39).

All material issued for, or time spent on, any machine or implement belonging to this category, whether for running, maintenance or renewal, should be duly recorded in the same way as the materials and

wages consumed in the manufacture of stock are booked (see Chapters II., III., IV.). The expenditure on the various machines and other objects constituting the Plant may be carried direct to the respective accounts in the Plant Ledger, in which case the total amount of wages, material, and sundry disbursements in the Commercial Ledger would, for any given period, agree with the totals under similar heads debited to the Plant Ledger and the Cost Ledger taken together, or the expenditure may

PLANT DEBIT NOTE.—SPECIMEN NO. 40.

Machines at Work in _____ Shop on _____ 19__.

No. of Machine.	Employed on Order No.	Time Working between.	To be filled in by Time Clerk or Machine Checker.		
			Time Working.	Rate to be Charged.	Amount.

appear in the Cost Ledger to the debit of the respective Plant Working Nos. Instead, however, of the latter accounts in the Cost Ledger being credited by a transfer to stock, as in the case of a Stock Order, they would be credited by a transfer to plant—a Plant Debit note (Specimen No. 40) being the medium. In either case the cost of, or expenditure upon, plant is carried to the debit of the various accounts in the Plant Ledger, and the process by which the amount written off in respect of use and depreciation is credited to the Plant Ledger, and debited to the Working Orders, which are to bear their proportion of the charge, is as follows. The time clerk or an assistant, or in a large establishment a machine checker, should

obtain each day from the foreman of the shop an account of the time during which each machine was working, and to what order number the work was done. At the end of each week, or other convenient period, a Plant Return (Specimen No. 41), should be compiled and sent to the counting-house.

PLANT DEBIT SUMMARY.—SPECIMEN NO. 41.

Return of Machinery at Work and Charges to be made for ———
ending — 19 .

No. of Machine.	Order No.	Order No.	Order No.	Order No.	Order No.	Order No.	Total for each Machine.
Total for each Order							

The life of a machine, or, in other words, the number of working hours of average effective service a machine will last, being known, the principal or some other competent person would establish a ratio between such working hours and the cost of the machine, including therein its original value, installation, maintenance, and other charges, and allowing for residual value.* On this basis a voucher would be prepared in the office for passing through the Cost Ledger the debits to the various working orders, and the credits to machinery accounts under the various numbers of the machines; or, in place of these vouchers, it may be

* As indicative of the greater attention now being given to the matter of effective working hours, it may be mentioned that in 1910 the charge for depreciation of machinery at the Glasgow Cotton Spinning Mills was reduced on account of shortened hours of work.

found convenient to enter all the details through a Plant Journal. When the machine is worn out, it should be sent into Stores with a Plant Recovered Note showing its estimated realisable value, at which amount it becomes a **Residual.** credit to capital. Any credit or debit balance **Value.** that remains on the book value of the machine may, as thought desirable, either be carried to the profit and loss account or to a reserve fund, should one have been opened to provide against loss on plant. Should it be found that the machine is likely to have a longer life, or to give more working hours than was expected, the rate per hour may of course be diminished, so that future working orders may not be debited at a higher rate than is necessary, and equilibrium on the debit and credit sides of the Plant Ledger be produced.

The increasing recognition of the need for the systematic treatment of depreciation is evidenced by the attention now given to the subject by accountants,* engineers† and managers.‡

To a large extent the discussion has centred on one or two general principles, such as the adequacy of the amount written off, the rates of percentage on various classes of machinery, and whether the rates should be based on original cost or yearly diminishing values, as these two methods produce widely divergent results in the accounts year by year. The incidence of depreciation on the cost of the product has received but scant attention. It has been proposed that by means of a register of plant, separate

* F. M. Burton, F.S.A.A., "Commercial Management of Engineering Works."

† "Repairs, Renewals, Deterioration, and Depreciation of Workshop Plant and Machinery." Paper read on Friday October 16, 1908, before the Institution of Mechanical Engineers, by James Edward Darbyshire.

"System in Factory Costs." James Rider.

accounts should be kept for different classes of machinery, showing the original cost, the maintenance and renewal expenditure, the yearly percentage written off original value, and the present value of each machine.*

The continuously increasing use of machinery, and the larger ratio the cost of its use bears to the total cost of production, emphasises the desirability first advocated in 1857, in this book, of systematically charging machinery costs over the processes or articles manufactured. The problem is not, as has been said, what system most fairly charges the profits of successive years, with the benefits respectively derived by these years from the use and enjoyment of the assets, but what system most fairly charges each unit of product with the proportionate cost of the machinery and plant expended on its production.

It has been suggested that the time rate for each machine should be based on the assumption that it is being worked continuously to its full capacity. Thereby the advantage, or the disadvantage, of the use of the particular machine relatively to manual labour or other machines, the effect of insufficiency of orders to keep the plant fully employed will be more manifest, and the extent to which economies in production could be carried under other circumstances more clearly shown. As machinery is often not continuously employed to its maximum extent the adoption of this procedure would generally entail less than the actual lessened value of the machinery being written off to the various Stock or other orders during any given period. The further suggestion has therefore been made that the balance remaining

* F. D. Leake, "The Question of Depreciation and the Measure of Expenditure on Productive Plant: a Plea for the Study and Use of Better Methods," paper read before the Institute of Directors, March, 1907. Leake's "Register of Industrial Plant for the Measurement of Depreciation." Good & Son.

on each plant account, being the difference between the amounts charged off on the before mentioned assumption, and the actual lessened value should be charged off by means of a supplementary rate to an Idle Capacity account, as representing a loss, or more correctly, a non-realised gain, consequent upon the non-utilisation of the plant to its full capacity. The information thus obtained would be of great value to the manufacturer in considering how he can, having regard to market and other conditions, realise from his plant the maximum economic advantage. The importance of this consideration cannot be too strongly emphasised, for whilst in the case of labour the number of employé's directly engaged in production can be regulated from time to time by the volume of trade, such readjustment is not possible in the case of machinery whose maintenance, standing charges, and depreciation have to be provided for, whether it stands idle or is employed.

Another mode of dealing with machine rates is to fix a normal rate per hour for the use of any particular machine, and charge the stock or other order accordingly, and to adjust these results from time to time by means of an abnormal rate which would be based on the fluctuations of trade, and the abnormal use or otherwise of the machine. If the results of the abnormal rates are charged off to the Stock or other orders, it would seem that so good a measure of the idle capacity of the plant would not be obtained as by the procedure before described.

Cost of fuel. This system of charging depreciation on the basis of the life of a machine and its cost would equally apply to the apportionment of the cost of engines

* Interesting data on the matter is to be found in "Factory Accounting as applied to Machine Shops," Whitmore; "Proper Distribution of Expense Burden," A. Hamilton Church; "Oncost," John Mann, jun., M.A.C.A.

and boilers and of the fuel used in them. The total number of hours the machinery is running will, the life and cost of the engines and boilers having been ascertained, enable working orders to be charged with their proportion of cost. Similarly, the aggregate number of hours the machinery is in use being known, the division of the fuel account for that period by this number will give the cost of fuel per hour for each working order.

The continuously increasing use of electricity as a motive power, and the attachment of motors to individual machines, permits by its possible subdivisions of cost, a much greater accuracy in the allocation of power charges than is practicable in the case of steam.

When depreciation is allocated to the various processes in the carrying out of which the plant has been deteriorated, it will not, of course, appear as a separate item in the profit and loss account, but will diminish the gross profit by increasing the cost of production of the articles manufactured, instead of showing larger gross profit only to be reduced by a general charge for depreciation, as is the case when a lump sum is charged to profit and loss account in respect of such depreciation.

The explanation of the prime cost system given in Chapter IV. was not complicated by a reference to the subject of machinery use and depreciation, which, at that stage, would have been inconvenient; but no difficulty will be found in assimilating this method of charging for the use of machinery with that of recording cost of labour and stores as described in that chapter, and thus ascertaining cost of production.

It should be mentioned that there are items in the books of a private firm or joint stock company to which no general

**Effect on
profit and
loss account.**

**Prime cost
and depre-
ciation.**

rule of writing off is applicable. Such are the cost of good-will, patents, trade marks, copyright designs, etc. ; for **Deprecia-
tion of good-
will,
patents, etc.** although, as in the case of patents, the life of the asset is clearly defined, the incidental advantages derived from the possession for a term of years of a valuable monopoly do not necessarily cease upon the expiration of the term of the patent. On the contrary, the value of the good-will may increase although the term of the patent is expiring. Whether there is a patent or not, good-will generally increases with age if profits are proportionately maintained, or are expanding. Assets such as these should be considered as having a combination value, differing altogether from their value *per se*. The obvious rule, therefore, is that in the balance-sheet such assets should appear at their cost value, and need not be written down unless their realisable value as integral parts of a going concern falls below their cost value. It is nevertheless desirable to create gradually special reserve funds against such values as a provision against change of conditions. Any estimated increment may be accounted for by the creation of a special fund, as explained on p. 114, but until such estimated increased value is realised it should not be considered as an element of profit.

A different set of considerations apply, however, to the writing down or off of wasting assets the property of the owners of the business.

In some cases, such as timber plantations, where the approximate value per acre of the timber is known, it is not difficult to arrive at the sum, having regard to the areas in the plantations in which the trees are felled, and the cost of felling in, and transporting from that area as compared with the other areas, which should yearly be

debited to an appropriate Trading Account, and credited to the account making provision for the amortisation of the capital originally spent on the plantation.

In the case of mineral ownerships where the contents of the mine cannot be ascertained, or of oil springs, or brine runs where the extent of the supply is not known, a reasonable rule would seem to be to charge revenue on the quantity extracted or drawn at the rates of royalty usually charged to their lessees by owners of such properties in the district.

Although from the decisions previously quoted, it is apparently not legally necessary to make provision for these and similar wasting assets, profits cannot, from an accountancy point of view, be truly ascertained without such provision is made.

CHAPTER VIII.

STOCK.

WE are now prepared to consider the final stage of the book-keeping appertaining to the production and disposal of commodities. In the preceding chapters we

Résumé. have endeavoured to show as comprehensively as the limits of this treatise admit, the manner in which the multifarious transactions relating to the expenditure of labour and material are recorded in the factory books, and how those books assimilate to the commercial accounts of a manufacturing business.

In the second chapter we have dealt with the employment of labour and the payment of wages ; in the third, with the purchase and consumption of materials or stores ; in the fourth, with the prime cost of the manufactured article called stock ; in the fifth, with indirect or incidental expenses and their allocation ; in the sixth, with the relation of fixed capital to cost ; and in the seventh, with the mode of charging the product with the cost of the provision and use of machinery.

In this chapter we propose to trace the records which should be made in connection with the realisation or distribution of the manufactured commodities. This branch of our subject embraces, so far as book-keeping is concerned, four distinct classes of transactions :—

Manufactured commodities. Four classes of transactions.

- 1st. The transfer of the finished article called stock from the factory into the warehouse.
- 2nd. The return of some articles from the warehouse to the factory for the various reasons which will be mentioned.
- 3rd. The sale or distribution of stock or manufactured articles.
- 4th. The return to the warehouse of stock issued, or of stock which was originally sold, but has been rejected or returned by the purchaser.

All these transactions have to be traced into both the stock books and the commercial books, and in the case of the sale of stock, and in that of the return or rejection of the stock issued or sold (the third and fourth classes respectively), the book-keeping is complicated by the fact that each transaction has to be brought into the Commercial Ledger at two different prices. That is to say, when an article is sold it is taken out of stock at the price at which it stands in the Stock Ledger, and, in the case of an absolute sale, it is invoiced to the customer at a higher price. As a consequence, a sale will appear in the Commercial Ledger to the debit of a customer, and to the credit of trading account, at the invoice price ; whilst by a corresponding but independent process of book-keeping, the same transaction will appear at a lower or the cost price to the credit of stock account, and to the debit of trading account. The converse will be the case when stock is taken back from a customer and sent into the warehouse, the price at which it is credited to a customer's account not generally being the same as that which it is debited to stock. In this way the stock account in the Ledger shows the aggregate cost value of the stock-in-trade ; the personal accounts,

**Two prices
for same
article.**

Stock Books.

the amount received, or to be received, by the firm in respect of the goods sold; while the trading account (which is debited with the items representing the value of goods issued from stock, and credited with the sales debited to personal accounts) will bring out the difference between the cost price and the selling price, which will be carried to profit and loss account, as the gross profit or loss. This process is effected by entering the sales in two separate books corresponding to each other, the one dealing with the invoice prices, the other with the cost prices, and likewise by entering the stock returned to warehouse in two books which perform similar functions for the cancelled sales. The two books in the first of these cases would be respectively the customary Sales Day Book, often called Invoices Outward, containing records of the invoices rendered, and the Sales Analysis Book, containing records of the stock requisition forms (Specimen No. 47) for stock issued. In the case of the return of stock the two books would be respectively the Sales Cancelled Book, containing records of the credit notes sent to customers, and the Stock Returned by Customers Analysis Book, containing records of the Stock Returned Debit Notes (Specimen No. 48). The advantage of carrying out the suggestions made in the introductory chapter as to distinguishing books by their bindings will be manifest in the case of these four books. The Stock Issued Book and the Stock Returned Book are kept by the warehouseman, whilst the corresponding books, viz., the Sale Analysis Book, and the Sales Cancelled Analysis Book, are kept in the counting-house. *

In giving titles to some of these books we do so primarily with the desire to indicate their functions, and, as already stated, the forms suggested must be taken to mark the transactions which it is necessary to

**Titles of
books.**

register rather than the outlines of records universally applicable.

The four counting-house books are posted to the Ledger ; the Day Book individually to the debit of personal accounts, and collectively, by means of the Journal, to the credit of trading account ; the Sales or Stock Issued Analysis Book to the credit of stock account and to the debit of trading account ; the Sales Cancelled Book, the converse of the Day Book, individually to the credit of personal accounts, and collectively to the debit of trading account ; and the Sales Cancelled or Stock Returned Analysis Book, being the converse of the Sales Analysis Book, to the debit of stock account and to the credit of trading account. (See Diagram IV.).

**Posting
of stock
accounts in
Commercial
Ledger.**

We can now proceed to a detailed examination of the book-keeping relating to this branch of our subject.

The first class of transaction is, as before stated, the transfer of the finished article from the factory to the warehouse. The form by means of which this transfer is effected has already been referred to as the Stock Debit Note (Specimen No. 35).

**First class
of trans-
actions:
Factory to
warehouse.**

This debit note is entered by the warehouseman in the Stock Received Book (Specimen No. 36), and posted to the debit of the Stock Ledger.

Upon reaching the counting-house the Stock Debit Note is entered to the credit of the Cost Ledger, as explained in the preceding chapter, and the total debits to stock, in respect of articles finished, are journalised month by month to the debit of stock account in the Commercial Ledger

**Stock Debit
Note.**

With regard to the return of articles from the warehouse to the factory, which constitutes the second class

Second class of transactions: Warehouse to factory.

of entries, it may be remarked that although the articles made for stock may all have been manufactured under the personal supervision of those who will more or less be connected with their sale, and questions as to the rejection of goods are not likely to be nearly as numerous as if the articles

Rejected Stock.

had been made by an outside contractor, still the question of the return to the factory of finished articles may arise either on account of bad workmanship or alteration of design, and must be provided for in the book-keeping. In all such cases it will be desirable to send into the store, at the time the finished article is refused as stock, a Transfer Note (warehouse debit to store).

In Specimen No. 42 this Transfer Note is shown with a counterfoil; but a duplicate, by means of carbonised paper, can be substituted.

The articles rejected as stock having been sent into store, it remains to be determined what alterations, if any, are to be made. Should further labour or material be required to be expended, a new stock order will be issued, and the recording of the expenditure will follow the routine laid down for the manufacture of commodities.

The adjustments as between warehouse and store are best recorded by the warehouseman and storekeeper entering the transfer notes in a Transfer Book.

Transfer Books and Notes.

The warehouseman will, of course, enter on the credit side of his Transfer Book the credits to his stock for the finished articles forwarded by him to the store. On the debit side of his Transfer Book he will enter the debit notes received by him from the

storekeeper for articles transferred from store to warehouse. The latter class of entries arise out of transactions of a retail character, not always carried on in connection with a manufacturing concern; but the concluding part of this chapter will be devoted to its consideration.

With regard to the Transfer Books, the entries made by the storekeeper will, naturally, be the reverse of those made by the warehouseman, and the store will be credited with all articles forwarded to, and debited with all articles received from, the warehouse. The two Transfer Books will therefore always balance. It will be necessary to post the items in the Transfer Books to the Stores and Stock Ledgers respectively, so as to bring out the correct balances, not only as between these Factory Ledgers in the aggregate, but also as between the individual Stores and Stock Ledger accounts.

The specimen ruling of the Store Transfer Book (No. 43) will, with necessary alteration of headings, apply equally to the Warehouse Transfer Book of which it is the counterpart.

Whilst we think it necessary to state in full detail the principles to be remembered in dealing with these transfers, it must in any individual case be left to the accountant to determine whether the circumstances of any particular business admit of the functions of the two Transfer Books being adequately performed by one book.

The transfer notes between store and warehouse, and *vice versa*, can, if the nature and extent of the transactions warrant it, when forwarded to the counting-house, be entered in a Transfer Analysis Book, and the Journal entry for the commercial books be based on the amounts so arrived at; or, if the transactions are few they can be recorded from the Transfer Notes into the Journal direct.

is found to be in proper form with regard to price, terms of payment, drawings or specification, date of delivery, penalties (if any) as to time of completion, cost of carriage, and mode of delivery, will probably initial it by way of authorising its execution. Should the stock of the commodities ordered be exhausted, or should the articles require to be specially manufactured, an order to manufacture the given or a larger number of similar articles for stock, should be passed concurrently with the acceptance of the order as already explained.

The customer's order having been accepted may be registered in an Orders Received Book (Specimen No. 44).

Orders Received Book. The order may then be passed on for execution to the warehouseman, who should have received a standing instruction to return all orders to the counting-house when completed. If it be thought unadvisable to pass the original order (which may contain references to

Advice to warehouseman. the terms of payment, commission, or discount, etc.) to the warehouseman, he may be provided with a copy or with extracts from the Orders

Received Book, or a special form of advice may be sent to him.

The advice may take the form shown in Specimen No. 45.

The form could also be made to serve the warehouseman as a Stock Requisition, and it would, in that case,

Stock Issued Book. be entered in the Stock Issued Book. In cases

in which the goods are ready for shipment, and further instructions have to be given concerning them, the form would be sent to the counting-house, and if the dispatch of the goods be approved, the requisition could be returned to the warehouseman with the information inserted thereon. It is necessary to follow this routine if,

as is sometimes the case, it is not possible for the customer to give complete instructions as to forwarding when placing the order, or if special arrangements as to payment before, or on, delivery have to be made.

In some cases it is desirable to supplement the Stock Requisition by a "Forwarding Note," issued on the request of the warehouseman. This note not only gives the warehouseman the final instructions as to shipment, but also attaches to the signatory the responsibility for the final tests or examinations of the apparatus having been made.

STOCK ISSUED BOOK.—SPECIMEN No. 46.

Date	Sales Order No.	Article.	No.	Weight.			Rate.	Amount.			Ledger Fol.
				Cwts.	Qrs.	Lbs.					

Should the original order be sent to the warehouseman the stock may be drawn from the warehouse, according to the conditions of the business, either by posting the order direct to a Stock Issued Book (Specimen No. 46), or by means of a Requisition Form (Specimen No. 47).•

The requisition would likewise require posting in the Stock Issued Book. In this case that book would require, for purposes of reference, an additional column for the No. of the Stock Requisition. The Stock Issued Book will of course in turn be posted to the credit side of the Stock Ledger.

Where there is a great variety in the articles sold, or multiplicity of transactions, it may be desirable that the counting-house should be kept regularly informed of the stock issued each day. This can be done either by alternate Stock Issued Books being kept, so that the previous day's record of stock issued may be always at the counting-house and the current day's record in the warehouse; or the warehouseman may send in every morning a Stock Sent Away Form, showing all stock that has been issued during the previous day, giving in each case the Order No., so that the clerk invoicing may immediately turn to the Orders Received Book and see the stipulations and conditions on which the order was accepted.

It is also desirable that the amount of the stock requisitions should, in the counting-house, be entered and analysed in a Stock Issued or Sales Analysis Book. This book (of which we do not give a specimen ruling, as it pertains to the counting-house) should be so ruled that the various items entered from the Stock Requisitions may be analysed under the various branches of the business. The aggregates of the totals of such branches would necessarily agree for any given period with the totals of the stock requisitions for the same period, and necessarily also with the totals of the warehouseman's Stock Issued Book.

The fourth class of transactions referred to at the outset of this chapter involves the procedure to be adopted in the factory with regard to stock which is rejected or returned, after having been sent out for inspection or approval, on loan, hire, or exhibition.

**Fourth class
of trans-
actions:
Stock back
to ware-
house.**

No. — STOCK REQUISITION FORM.—SPECIMEN No. 47.
 Requested from Warehouse 19 No. — Entered in Stock Issued Book, Fol. —
 Requested and Received from Warehouse 19

Article.	Sale Order No.	Weight.		Article.	No. of Sale Order.	Weight.		Rate.	Amount.	Stock Issued Book Fol.
		Cwts.	Lbs.			Cwts.	Lbs.			
•										
•										
•										

Requested by — Received by —

No. — STOCK RETURNED DEBIT NOTE.—SPECIMEN No. 48.
 Stock returned to Warehouse 19 No. — Stock returned to Warehouse 19

Article.	Sale Order No.	Weight.		Article.	Sale Order No.	Weight.		Rate.	Amount.	Stock Issued Book Fol.
		Cwts.	Lbs.			Cwts.	Lbs.			

Returned by — Received by —

Stock Returned Debit Note.

The warehouseman on receipt of such goods will make out a Stock Returned Debit Note (Specimen No. 48).

Stock Returned by Customers Book.

These Stock Debit Notes will be duly entered in a Stock Returned by Customers Book (Specimen No. 49), which will be posted to the debit side of the Stock Ledger.

STOCK RETURNED BY CUSTOMERS BOOK.—SPECIMEN No. 49.

Stock Debit Note.	Article.	Sale Order No.	No.	Weight.			Rate.	Amount.	Stock Ledger Fol.
				Cwts.	Qrs.	Lbs.			

The Stock Returned Debit Notes are in the office entered and analysed in a Stock Returned by Customers Analysis Book, which is the converse of the Sales Analysis Book already referred to. As an instance of the possibility of concentrating the books while adhering to the principle laid down, it is well to mention that in an establishment where there is little variety in the articles sold, or where the sales are not numerous, the stock requisition might form the basis on which goods are invoiced from the office. In such cases the Sales, or Day Book (debit to customers), should be provided with a column in which the stock price of the article as shown on the requisitions could be entered against the respective invoices. It would thus be possible to obtain by the mere process of addition the total amount of the invoices

Stock Returned Analysis Book.**Concentration of Books.**

rendered, and the value at stock prices of the articles so invoiced, thus obviating the need for a Stock Issued (or Sales) Analysis Book.

Equally the Stock Returned Debit Note for goods returned by customers might be treated as the basis for the credit note to the customer, and the Sales Cancelled Book (credit to customers) might be so ruled as to show the invoicing, as well as the cost rates of the stock invoiced and returned, thus obviating the need for a Stock Returned Analysis Book. This concentration of books does not prevent an analysis being made under departmental or other heads, either of the invoices or credit notes, or of the corresponding stock requisition or stock debit notes. The issuing of credit notes for allowances made by the principals either on account of defects in the articles supplied, or for other reasons, is not dealt with in detail, such issue and record being usually a matter of office routine.

In the case of articles sent out for inspection, on approval, consignment, or loan, it is very desirable that while a *pro forma* invoice, at the normal selling price, should accompany them, the articles should, until an order is received or a definite sale effected, be dealt with in the Sales or Day Book at their stock prices as the invoicing rates. We cannot too strongly insist on the great disadvantage of treating loaned goods in any other way. The system of showing book profit on these transactions is most fallacious, and so misleading that fortunately it cannot be resorted to extensively, or for any length of time, without causing serious embarrassment. It is evident that the stock loaned is not likely to be a constant quantity or of fixed value, and that if treated in precisely the same way as goods sold the profit and loss

account for any period is unduly increased at the expense of other periods. In addition, the profits are not even realisable until the sale is made. Articles sent to branch establishments necessarily follow this rule also. At each balancing period, therefore, the Returns Book should be specially examined to see that allowances for all returns are properly brought into account. In some cases these transactions are ultimately recorded in special books, known as "On Approval" or "Consignment" Ledgers.

It will be manifest that the entries in the Stock Ledgers consist of debits for stock received from the factory and for stock returned from customers, and of credits for stock sold to customers and stock transferred to store and that the balances under the various headings will show the number and the value of the various articles on hand, and the aggregate of such balances the total value of the stock, which should of course agree with the total value shown by the Commercial Ledger, and with the results of the surveys.

It will also be obvious that, as regards the office, the various items in the Day Book and the Sales Cancelled Book being posted respectively to the debit and credit of the various purchasers, the sum of such items will in the case of the Day Book give the total credit to trading account for invoices rendered, and in the case of the Sales Cancelled Book the debit to trading account for stock returned by customers.

The total of the Sales Analysis Book gives the amount which through the Journal is debited to trading account and credited to stock, and the total of the Stock Returned by Customers Analysis Book gives the amount which through the Journal is debited to stock and credited to trading account.

When these entries have been made the trading account will show with absolute exactness the gross profit realised, and the balance of the stock account (after journalising the debits to stores and credits to stock on account of transfers) will be the value of the stock ready for sale. The relation of these various transactions one to another will be made manifest by Diagrams IV. and V. In practice an account in the Stores Ledger may be the record of an article or a group of articles, as may be found the more convenient and expedient for the purposes of the business, and the methods, as previously described, of economising detail in the Stores Ledger are equally applicable in the case of the Stock Ledger.

In an earlier part of this chapter we alluded to the possible combination of a manufacturer not only distributing the commodities he manufactured, but also, in exceptional cases, acting as a retailer of goods produced by others.

It must not be overlooked that there is a fundamental distinction in these transactions. If a manufacturer acts to any extent as a retailer, it will be well to draw a clear line of demarcation between his two branches of business. In the retail branch, which is an ordinary buying and selling, and not a manufacturing, business, the book-keeping is such as properly pertains to the general office. In an extensive business where this combination obtains, it may be desirable to establish a separate retail warehouse as distinguished from the warehouse which is the repository of the manufactured stock.

If, however, the retail transactions are exceptional, and their volume does not warrant in practice any absolute division from the manufacturing portion of the business, the articles which are bought merely for reselling, and on

**Further
notes on
retail trans-
actions.**

**Retail
warehouse.**

which neither time nor material are expended in the factory, can be dealt with either as stores, or as we think preferably, as stock.

If they are dealt with as stores, the procedure followed is that described in Chapter III. for the receipt and withdrawal of material, save that the store warrants **Store method.** for articles withdrawn for sale, when they reach the general office, should be entered in a Stores Sold Analysis Book, the items in that book being posted to the debit of a stores sold, retail trading, or other similar account in the Commercial Ledger, the credit to that account being the total of the invoices rendered to customers for goods retailed, and the balance representing the gross profit or loss on that branch of the business.

If articles for retailing be treated as stock, the invoices from the vendors can be passed to the warehouseman, the procedure being similar to that for invoices for **Stock method.** stores purchased, and which is fully described in Chapter III. In this case the invoices would be debited in the general office to stock account; and the withdrawal of the articles from the warehouse would entail a credit to the same account, and a debit to a retail trading account; this latter account being credited with the value of the invoices rendered to customers. So far as the factory is concerned, the invoice for goods purchased would pass through the Stock Received Book (Specimen No. 36) into the Stock Ledger, and the Stock Requisition (Specimen No. 47) would pass into the same ledger through the Stock Issued Book (Specimen No. 46).

An equally effective and probably more simple method would be to pass all such exceptional items from store into stock by means of the Transfer Book (Specimen No. 43). By these means all invoices for goods purchased would pass through the commercial books to the debit of one account,

namely, that of stores, and conversely all invoices for goods sold would pass through the same books to the credit of the trading account, the debit to this account arising from the stock value of the goods.

We have already referred to the desirability of localising the cost of articles, and shown that the cost of parts of articles can be ascertained by following the routine described, but in concluding this chapter it will be well to refer briefly to those cases in which parts complete in themselves but subsidiary to the manufacture of other articles, are produced in greater quantity than is required for the manufacture of the articles of which they form part. This increased production may be due to certain parts being of a more permanent type than others and added to stock with less risk of obsolescence, to their greater production at one time cheapening the cost, to their being parts which may be required for renewals or repairs, to there being a dearth of work in any particular branch of the factory, or to other special causes.

Whatever be the reason for their production, all expenditure on them should be recorded as in the case of a manufacturing or stock order, and the routine described in the chapter on stores should be followed. As the parts made in excess of the number required for the manufacture of the finished article will all have been charged to stock by means of the Stock Debit Note, those intended for sale will remain in the warehouse and be duly recorded in the Stock Books, while those parts intended for future use in manufacture will require to be transferred to the store by means of the Transfer Books, and will be drawn out of store by means of Stores Warrants like all other material required for manufacture.

Diagram V. gives a view of the books and forms referred to in this chapter, and their relation to each other.

CHAPTER 1X.

SURVEYS.

THE most obvious utility of the Stores and Stock Ledgers, kept in the manner described in the preceding chapters, is that by their means the store-keeper, warehouseman, and others concerned, are able to ascertain what is the quantity of any particular commodity on hand at any given time, without the delay and expense involved in the process generally known as "taking stock." The ability to obtain this information in an accurate and speedy manner has a very wide and important bearing upon the general accounts of the firm. Unless it is at command it is impossible, in undertakings of any magnitude, to determine, even approximately, until a survey has been made, what is the result of the business. It is claimed for the system of accounts we have explained in these pages, that one of its chief advantages lies in the fact that it obviates the necessity of taking stock simply for the purpose of drawing up a balance-sheet. The economic value of this advantage to principals whose business is liable to many vicissitudes, can scarcely be overrated, for it removes one of the most powerful obstacles to the frequent closing of the books and ascertainment of the results of the business. There is no doubt that balance-sheets would be

**Utility of
Store and
Stock
Ledgers.**

**Stock-
taking for
Balance-
sheet.**

made up much more frequently than is usually the case, if it were not for a survey being a very troublesome and expensive matter, and that proprietors would be kept more fully *au courant* with the tendency of their business than can be the case when the books are closed only at long intervals of time. Under the methods of book-keeping here advocated, a survey would simply serve the purpose of substantiating the results deduced from the books of account, and it is this feature which, perhaps more than any other, distinguishes a proper system of Factory

Many Fac- Accounts from the method generally adopted.*

tory Ac- Factory books, when kept, are often for the
counts mere
memoranda. most part of the nature of memoranda, being simply methods of book-keeping by single entry, and lacking both in coherence and continuity, inasmuch as they are merely disconnected entries, which can be verified and assimilated only by means of the periodical surveys.*

Unless Stores and Stock Ledgers are kept in some such way as described, it is imperative that the survey of all articles, if it is to answer any useful purpose, should be made at one time, for, in the absence of factory books, the only

Survey and comparison of which the result of the survey
Commercial admits is with the totals of the stores and stock
Ledger. accounts of the Commercial Ledger; but even

this comparison can only be one of book values and not of quantities or measurements, and an effective verification of the details of the survey is altogether out of the question.

* "Cost accounts which do not at any time come into agreement with the Commercial Accounts, and are not subject to those continuous checks which safeguard the accuracy of the Commercial Accounts, cannot at their best be much more than cost memoranda, with more or less uncertainty as to the results obtained, according to the conditions under which they are operated."—"Manufacturing Cost." Paper read before the Ontario Institute of Chartered Accountants, May 15, 1905, by W. H. P. Anderson, C.A.

If the survey is simultaneous it is necessary either to suspend for the time the issue and receipt of materials, or to

make subsequent additions and subtractions in respect of materials received or issued during the period of stock-taking. Disorganisation

generally ensues during this period, and to such an extent is this the case that it is often found necessary and convenient to suspend business while the process is going on.

While pointing out the inconveniences attending periodical and simultaneous surveys of all properties, we do not wish to detract from their importance upon special occasions, when for some special reason the verification of the balances of the Stores and Stock Ledgers may be required.

The existence of the Stock and Stores Ledgers enables surveys to be taken by degrees, and at times when the

state of business is such as to minimise the disorganisation and attendant loss of profit.

Precautions would have of course to be taken in cases in which a simultaneous stock taking or survey never took place, that stores or stock were not transferred from one place or department to another so as to do duty in more than one capacity. There is reason to believe that store-keepers and warehousemen would be more vigilant if they knew that, instead of a periodical survey, an inventory of any of their stores or stock might be called for at any time and without warning, and that they would be required to explain any differences between the Survey and the Ledger accounts. A further advantage of the Stores and Stock Ledgers is, that by their means any excess or deficiency of commodities shown by the surveys can be localised and easily traced.

It is to be regretted that there does not seem to be in practice any absolute standard of efficiency in regard to

stock-taking, and that the term is often applied to a superficial review of the articles, and to an estimate of what is, or, worse still, to a guess at what should be, **Standard of efficiency.** the value. In an efficient survey every record should be based on "handling," and nothing should be estimated or taken for granted, while the pricing of the articles should be based on the principles which will be hereafter referred to. In the case of large bulk stocks, such as pig-iron, ore, and similar supplies, if their weight is not ascertained by measurement, it is often a considerable time before the stocks are sufficiently reduced to enable an inventory to be taken by means of lifting and weighing, but if a small extra percentage is added to the consumption to save waste, the survey generally verifies the book figures.

The work attendant on a survey can in practice often be best organised by one person well acquainted with the goods calling out their description and quantity to another who enters them on the survey sheets. The pricing of the sheets being undertaken by a third who obtains his data from the tabs or tickets on the bins, racks, or other stores receptacles, or from other sources, the calculations and costs and the checkings thereof being done by the accountancy staff.

The results of the survey should be epitomised on survey sheets, of which Specimen No. 50 shows a ruling that will be applicable to most trades. These sheets should be so arranged as to admit of comparison with the corresponding accounts in the Ledgers.

If the system suggested in these pages be adopted, the result of the surveys would show an agreement between the number and weights or measurements of the articles according to the inventories and those standing as balances in the Ledger, and also •

**Agreement
of survey
results.**

between the aggregate money value of the articles and the balances of the respective accounts in the Commercial Ledger. It is desirable that the Ledger Balance and the Survey Sheet totals should be tabulated for comparison in

STOCK SURVEY SHEET.—SPECIMEN No. 50.

Stock _____ at _____ on _____

Description.	Supplied by	No.	Weight.			Rate.	Value.			Remarks.
			Cwts.	Qrs.	Lbs.					

detail, so that excess or deficiency in any particular item may be noted, and any undue discrepancy in excess of the margin of error in waste or weight be inquired into. Where this has not been corrected by scale adjustment or individual weighings, a comparative statement of excess and deficiency under various headings is often useful as revealing any defects in ledger-posting classification. According to the system just described the surveys would theoretically be divided between three main departments. The storekeeper would be responsible for the

Stores. store of raw and old material and such articles, other than manufactured commodities and plant, as may for the time be in his charge. The next

division would be that of the warehouseman, who would **Stock.** have the custody of the stock of manufactured goods; and the third division would only exist where the system of registration of plant described

in the chapter on Fixed Capital had been adopted, and would comprise all fixed and loose plant and tools. As

Plant. has already been pointed out, however, there is no objection in principle to the two departments of Stores and Stock being amalgamated, so far as the situation and custody of the same are concerned, provided the important distinction in the book-keeping explained in previous chapters is preserved. When this is done there will be no necessity to draw any fundamental distinction between these two departments for the purpose of surveys beyond such mechanical divisions as may suggest themselves in particular cases with the view of facilitating the preparation of the inventory. If that method is properly carried out, it will be found to be purely a matter of convenience in any business what divisions are made in the arrangement and disposition of the various articles. In the same way as the books, when properly kept, will bring out the correct quantity and value of the plant wherever the machines and tools constituting the plant may be located, so they will also show the value of the stores and stock, no matter where these may be distributed. It is quite evident, however, that the quantity of stores and stocks on hand may be of such magnitude as to render the division of responsibility a matter of absolute necessity. It will then probably be found advisable, in addition to carrying out the three main divisions before suggested, to give distinctive names, num-

**Mechanical
divisions
and aids.**

bers, or letters, to the different subdivisions of the stores and warehouses, and to identify those distinguishing signs with the headings of the corresponding accounts in the Ledgers. Each floor, room, or section could be under the charge of one man, who should be responsible for the accuracy of the

records of the articles in that place, and should have a place for everything, and have everything in its place. He will be much assisted in his work if the store or warehouse is fitted with such bins, racks, shelves or other receptacles as are most suitable for the materials or articles dealt in, and by those of the same species being stored near to each other. Each of these species may also be advantageously referred to by numbers, and the sizes or other variations therein, either by letters conjoined with the numerals, or by further numerals used as a denominator. A Store or (as the case might be) a Stock Register, would thus permit of the identification of each article by name and numbers, and also record their location in the building. The custodian saves himself trouble, and avoids confusion, by placing on all large articles, and on the lockers or partitions containing the smaller ones, labels, or tags, describing the articles, and giving in the case of raw materials the name of the supplier, and in the case of manufactured articles the number of the stock or manufacturing order, the date of receipt, and, if thought advisable, the price of the article marked either in cyphers or in plain figures. The utility of indicating the price is not confined to surveys, but enables the issuer of material or stock to immediately mark on the Stores Warrant or Stock Requisition the price of the article he has issued without referring to the Ledger. The labels or "tags" are often so ruled or arranged as to permit of the recording thereon of all the receipts and issues of the goods stored in the particular receptacle. Lockers or similar receptacles should be marked with their own weight so as to permit, if thought desirable, of the contents and receptacles being weighed in one operation. Barrows and other similar appliances should also have their tare weight painted on them.

The stores of the different articles should be located as near as is conveniently possible to the shops in which the articles are mostly used. In the location of the articles in the stores, regard should be had to ease in lifting and to the number of times they are likely to be called for, so as to reduce labour in handling to a minimum. The essence of the satisfactory working of a stores or stock system is that articles should not be issued without the issuer receiving a formal requisition for them from some authorised person. The articles he has in charge should be to the storekeeper or warehouseman what cash is to a cashier. No one expects a cashier to part with money save as against a cheque or receipt, and no one, not even excepting the principal, should expect a warehouseman or storekeeper to part with goods save as against a written requisition or receipt. In some cases in which loose tools are kept as part of the stores or stock, and issued to employes temporarily for a special use, a suitably stamped token is accepted from the employé as the equivalent of the tool, and the token is placed in the space left vacant by the issue of the tool. Should either the storekeeper or warehouseman feel that he has not a sufficient control over articles in his charge, owing to their not being in the magazine or warehouse, or for any other reason, the articles may be chained, padlocked, sealed, or otherwise distinguished in such a manner as to show that they are still either "stores" or "stock." In this connection it may be well to point out that in establishments where large numbers of workpeople and others pass through the gate, the watchman or gatekeeper should have instructions not to allow any raw material or manufactured goods to be taken outside the factory either by employes, or in carts or other vehicles, without the

**Essential of
stores and
stock
system.**

necessary permit from the storekeeper or warehouseman. These permits, or passes out, should be entered by the warehouseman or gatekeeper in a Gate Book which should be periodically examined and checked in the office. The Gate Book should also contain records of goods which have passed the gate, whether received from vendors, or returned by customers. The watchman or gatekeeper should also be instructed to look at the contents of carriers' carts when leaving the works, after delivering goods, so that material may not be improperly taken out of the works by these means. An incidental advantage of keeping stores and stock on the system described is that it permits of a Stores Price Book and Index being kept with comparatively little additional clerical work. The Price Book is a valuable record of prices, whilst the Index locates the position in the store of various kinds of material.

Although the distinction between Stores and Stock is fundamental, and is not likely to be lost sight of by the reader, it is well to point out the desirability of the storekeeper having a general knowledge of the nature and quantity of stock in the warehouse, and of the warehouseman being equally well informed of what material is in store. When parts of an article are both used in manufacture and sold, there will be a supply both in the warehouse and in the store, and any sudden or abnormal demand on either of the departments can be met by the one department transferring its surplus to the other, in order to meet the emergency. An idle or excessive supply is not wanted in either branch, and although the articles common to both are not likely to be numerous, the rise or growth of such excess could be easily checked by the warehouseman being supplied at intervals with a schedule of the articles in store, which could, if

**Excess
Supply.**

necessity arose, be transferred to him as stock, and by the storekeeper being provided with similar information as to the stock. It is evident also that an equally efficacious check could be applied in the general office, where both the stock and store of any article would be known, and whence no order to manufacture would proceed until it was shown that the number on hand was not sufficient to meet the demand.

The principles which determine the question of how materials and manufactured articles are to be priced at a survey admit of much discussion, but we cannot here do more than indicate the general axioms which should be observed in a valuation of Stores and Stock. It is obviously unsound to base a valuation one year upon the cost of production of an article, and another year upon its estimated or even ascertained market value; but, nevertheless, it is to be feared that this is not unfrequently done. The course adopted by most of the best managed manufacturing firms is to value the stores at the net cost or invoicing price to them, and the manufactured articles on hand at their cost, without any addition for profit, or for standing charges as distinguished from factory charges. In some cases in which large quantities of raw material of the same description is obtained in varying quantities from various suppliers, and is used for a number of production or stock orders, it is usual in order to save clerical labour to charge the issues out on the basis of a monthly average price, obtained by taking the quantity on hand at the beginning of the month and its value, adding thereto the purchases for the month and their values, and taking the average price thus obtained as the price for all issues during the month. The greater accuracy that would arise from charging out each issue at its actual cost is

said not to be worth the value of the clerical labour involved, and that in fact the variation is but slight. In the case of material or articles laid down for seasoning or maturing purposes, the invoicing price is sometimes increased *pro rata* to the amount which may have been charged to the account in the Commercial Books as representing interest on the capital expended in the purchase of material not ready for use. The same procedure, but only up to the limits of normal or average price, is probably justifiable when, owing to some special circumstances, such as a forced realisation, or sale by auction, stores or material have been purchased at less than cost price. Profit which may eventually arise from the use or sale of specially low purchases should not be anticipated, but it would not seem unreasonable to charge interest on the dormant capital, but subject to the limits already referred to. In some instances advantage may arise from the cost of the Stores Department being met by a percentage commission being charged on the value of the Stores issued, and it has been suggested that this loading percentage should equal the discount at which supplies are bought, so that the Stores Department would thus automatically make a profit or loss, equal to the amount by which its expenses were less or greater than the aggregate discounts it obtained. This method, however, may lead to departmental friction, and in some cases, especially where large trade discounts were allowed, would tend to

vitiate the actuality of cost records. The practice of including in the valuation of Stock a percentage for establishment expenses, or standing charges is one which cannot be too strongly condemned, if on no other ground than that a business which is really the reverse of profitable might,

**Book values
should not
include es-
tablishment
charges.**

by the simple device of manufacturing and accumulating a large stock, be made to appear for a time as at any rate self-supporting. That is to say, a business might be made to appear flourishing, while as a matter of fact it was becoming less solvent, by reason of its cash and other available assets being converted into manufactured stock which may never be realisable, and by the standing charges (if these are included), which in the absence of *bona fide* business transactions would represent losses, being made to figure in the balance-sheet as good assets

Profits are latent. in the shape of stock on hand. The right principle undoubtedly is that in a manufacturing

business a profit should not be considered to have been made until a sale has been effected, or until a contract for the delivery at a future date of goods already manufactured has been entered into.* In the case of the production of raw materials and in those exceptional cases in which the stock of manufactured articles could be put upon the market and realised at their normal price, a modification of this principle however would seem to be necessary; for in that case the product is generally saleable at an ascertained market price (or, at any rate, at an approximation to it), and it does not seem incorrect to say that the profit which that price leaves has been earned on the production of the commodity and not on its sale. Nevertheless, even in this case, it would probably in the long run prove to be more

* "Profits can only be made out of the sale or exchange of one commodity for another of a definite and realisable cash value. The price increase in the market value of an article which it is not intended to sell at that time, cannot be considered as a profit, for the reason that the article may never be sold at that price, and the paper profit may never be realised. . . . In a quite recent case, the directors of a corporation have been held personally liable for a sum of \$1,000,000 in respect of dividends distributed to stockholders out of fictitious profits created in just this way."—A. L. Dickinson, M.A., F.C.A., C.P.A., "Some Special Points in Corporation Accounting."

judicious to price the commodity in the books at its cost, and only to credit profit and loss account with the profit when sales have been effected. In the exceptional case of the market price being lower than cost, the market price should be taken. It has been previously mentioned that material or partly finished articles when transferred from one department to another should be priced at their direct cost only, and, as pointed out by Mr. William Lybrand, C.P.A., in an interesting paper on "The Accounting of Industrial Enterprises," read on October 22, 1908, at the Annual Meeting of the American Association of Public Accountants at Atlantic City, New Jersey, this rule is also applicable in the case of a Trust or Merger Company in relation to its subsidiary companies. Mr. Lybrand points out that the purchase having been made by one subsidiary company from another, is in effect merely a transfer from department to department of virtually the same corporation, and not a sale on which the profit can be said to have been realised.

The principle that profits must not be anticipated would seem therefore to be applicable in such instances, and it would follow that a reserve should be provided equal to the amount by which such merchandise at inter-company prices exceeds its actual manufacturing cost.

The rule is not, however, in Mr. Lybrand's opinion one of unreserved application, and he instances the case of an iron and steel combination controlling the manufacture of its product from the ore in the ground to the sale of the finished merchandise. In some cases "there are a number of points in the process of manufacture where the merchandise reaches a finished and marketable stage. While at each stage in the manufacturing process some of the merchandise is sold to outsiders, much of it is transferred to other mills

for further manipulation at a price which includes some profit to the subsidiary company by which it was handled. Is it entirely unreasonable to claim that, where the manufacturing processes are distinct and complete, some manufacturing profit shall be taken in the current Income Account on merchandise finished by one company, but remaining in the inventory of another company while awaiting further transformation?

In the balance-sheet of a large industrial enterprise such profits are applied as a separate part of the Surplus Account distinct from the ordinary accumulation of surplus with a note appended setting forth clearly the nature of the item.

In the majority of cases manufactured stock has to be kept till a demand for it arises and orders are received. In the meantime it may deteriorate or the price may fall, or in certain cases it may go out of fashion. The system of valuing at cost has the additional advantage when stocks are held for any length of time, of obviating the necessity for periodical alterations of the valuation and consequent adjustment of the profit and loss account owing to fluctuations in the market price of the commodities. A valuation based upon cost, not including in the term standing charges and interest on capital,* would hold good for a long period of time; so long, in fact, as the article was preserved in its pristine condition, unless improved processes or other causes should so reduce the cost of similar articles as to render a corresponding reduction of the valuation of the old stock necessary in order to establish the proper relation between

* "To change interest into costs is in effect to add to these costs a certain amount of profit before it has been made, and is therefore against sound commercial and accounting principles."—Dickinson, *supra*.

it and the new price that would probably rule in the market. Any deterioration which the goods on hand may undergo through being old, out-of-date, or through other causes, should, of course, be periodically written off, and the stock thus brought down to probable realisable value. When stocks become entirely obsolete they should be reduced to their scrap value. Inordinate reduction in the value of assets however is not always a proceeding deserving unqualified approval. It is quite conceivable that by taking undue advantage of facilities and opportunities which may exist at particular periods for writing down the value of assets, the firm or company may be placed in the position during subsequent years of making book gains which would not be realised but for the previous artificial reduction in values, and in this way the accounts of the business are apt to prove misleading. It is well that this effect of excessive reductions in value should not be overlooked, indeed, its dangers appear to have been recognised by the Legislature, for, under the Companies Act, reduction of paid-up capital is limited to the amount which, according to the affidavits of responsible officials, has been lost, or is unrepresented by available assets. The old material on hand should be taken in a stores survey at the market value of such old material, or at the price at which similar old material was last disposed of, unless such price be higher than the market price, in which case the lower value should be taken. It is desirable that in both the Stores and Commercial Ledger old material should be kept in an account distinct from new material.

The amount by which stock is to be written down in respect of ascertained depreciation may be debited to profit and loss or subsidiary trading account, and credited to the Stock account in the Commercial Ledger.

the Journal. The warehouseman would pass a stock requisition through the Stock Issued Book to the credit of his Ledger accounts in the same way as if the amount represented withdrawal of stock; and the same procedure applies in the case of reduction in the value of stores.

**Loss on
Stores and
Stock.**

Having referred to the more prudent policy of not including the expenditure of standing charges in the valuation of stock in hand, it may be desirable to point out that cases arise in engineering and other constructional establishments in which extensions are carried out by means of the plant and appliances of the firm instead of the work being entrusted to others.

If the revenue-earning power of the undertaking is increased by such additions, it is doubtless permissible to charge the cost to capital. In such capitalisation, however, care should be taken not to include any standing or other charges which would have been incurred, whether the extensions had taken place or not, and even a charge for the use of machinery and plant should be very carefully scrutinised, with the view of avoiding the inclusion as realised profits of amounts which are merely transfer profits between departments or branches. The saving that may be made by the work being done at cost must not be confused with a profit earned.

CHAPTER X.

SUBSIDIARY BOOKS.

IT remains to refer to some subsidiary books in use in factories and warehouses, which, although they have an important bearing on Factory Accounts, do not properly fall under any of the preceding chapters.

**Subsidiary
Factory
books.**

Not to detract from the main issues of our subject we have studiously avoided special reference to these ancillary books and matters, and we do not now refer to them with the view of attempting to exhaust the catalogue of account-books which in practice may be necessary in a factory. Such an attempt would be altogether futile by reason of the conditions and requirements of individual businesses varying too widely to warrant anything more than a general statement being made of the fundamental principles underlying the economy and routine of a factory—principles to which all details to be of service must conform.

In this chapter we shall first describe the method of book-keeping to be adopted in the case of plant or machinery acquired on terms of deferred payments, and mention a few considerations bearing on the subject of the accounts of Government and municipal factories, and on those of the workshops of railway and

**Summary of
Chapter.**

similar undertakings where expenditure and production are of the nature of auxiliary operations and have not for their primary object the raising of revenue or the making of profit. We shall then deal with a few of the books employed to record transactions with regard to such matters as cartage, van, wagon, craft, and railway traffic, packing, and fuel.

Inasmuch as the practice of purchasing plant on what is known as the purchase hire system is becoming more general,—there being in some circumstances an economy in the acquisition of new plant, machinery, wagons, etc., on terms of deferred payments,—it is desirable to consider the entries which should be made in recording such transactions. It has been suggested that a simple and safe method of dealing with the book-keeping pertaining to this system is to ascertain what will be the “ultimate” value of the object when the various instalments have been paid, and to divide this “ultimate” value by the number of the instalments, and credit the product to capital each time an instalment is paid, the remainder of the instalments being debited to profit and loss account. For example, it is suggested that in the case of a wagon purchased for £60, payable in twenty instalments, the ultimate value being £40, that as each instalment is paid £2 should be charged to capital and £1 to profit and loss account. The method suggested is undoubtedly a simple one, and in many cases it is probably as correct as the circumstances require. In the illustration given we presume, though it is not stated, that the “ultimate value” of the object—after the payment of all the instalments—covers an amount for depreciation during the time it has been in use; but in any case, we

**Purchase
Hire
System.**

think it would be well that the amount charged under the various heads should be more fully specified. The difference between the cost value to the purchaser of an object acquired upon terms of deferred payments and its "ultimate," *i.e.* ordinary value, is the product of two factors, *viz.* interest on the deferred payments, and the natural or normal depreciation by use and deterioration in the value of the object during the period of hire. We submit that these factors are so essentially different that they should be separately recorded. The one bears a close relation to, and has to be considered in conjunction with, the capital account of the business, and the rate of interest borne by that account; the other is a trade expense which is regulated by the volume of business, and the corresponding wear and tear of the object and its tendency to obsolescence. An article after being acquired on the purchase hire system, should be debited to plant or other appropriate account at its value as if purchased for prompt cash, and the difference between that value and the aggregate amount payable under the purchase hire agreement should be taken to an interest on deferred payments account, the whole of the liability being carried to the credit of a personal account with the vendor of the article.

As the instalments are paid, cash account would be credited, and the personal account with the vendor would be debited, with the amounts of the instalments. The amount debited to plant or other account would be written down in accordance with the principles of book-keeping applicable to fixed capital, and already discussed, whilst the amount standing to the debit of interest on deferred payments account would be distributed over the period of hire. This is on the assumption that all the instalments are paid, and the purchase of the article ultimately

completed ; but should this not be the case, and the article be returned after an interval of hire, the personal account with the vendor would be closed by being debited with the balance standing to his credit, which would *pro tanto* be credited to the plant account and the interest on deferred payments account. Any remaining balances on these latter accounts, representing as they would the loss on the non-completion of the purchase, would be passed to profit and loss. A further advantage of this method is that it enables the article purchased on this system to be treated from the outset as if it were actually the property of the intending purchaser, and this, it will be recognised, is the only sound view to take of the transaction,* as, although not the legal owner till the final payment is made, by the adoption of the liability he becomes the economic owner. If the purchase should not be completed, the accounts will show exactly what sacrifice is involved ; and they would moreover show the position of the transaction at any stage of the period of hiring.* The question of deductions from profits for Income Tax purposes on account of wagon hire purchase and the views or practice of the surveyor is, however, a factor to be borne in mind by the owner in determining the method to be adopted.

There is necessarily greater simplicity in recording expenditure in those cases where production is not for profit, and articles are made or repaired only for the sole and incidental use and benefit of the concern, as, for instance, in arsenals, dockyards, and other national and municipal workshops, railway, gas, tram, and water companies, than in a factory

**Factories
not working
for profit.**

* The subject is discussed in detail in a lecture by Mr. F. Halsall, A.C.A., on "Railways Wagons under Hire Purchase Agreements," reported in *The Accountant* of December 22, 1906.

working for profit in competition with other producers. The principles of Factory Accounts explained in this volume are in all such cases applicable.

Whilst the requirements of a Government arsenal, however, are not those of factories working for profit, which have to be conducted on lines enabling the proprietors, in the face of keen competition with other manufacturers, to supply the demands of the public at a profit to themselves, it may, in passing, be mentioned that an ingenious and elaborate system of recording the expenditure in Government workshops by means of cards, on which the entries are made by symbols, has been described by Captain Metcalfe.[†] This method has much to recommend it, but it does not very well admit of the assimilation of accounts with a view of drawing up periodical statements showing the profit and loss on all the operations and the actual financial position of the concern. This is, in fact, admitted by the author himself, when he says: "I have vainly tried to find some simple current method of reconciling the cost sheet with the cash accounts, since this would establish the aggregate truth of the cost sheet before the highest court of audit known to military accountability. I am convinced not only that this is impossible, unless either the papers are very much complicated, or unless substantial truth is neglected for the sake of striking a balance; but I also believe that the same result is indirectly attainable by other means already described." Although the defect referred to may not be inherent in the system of recording expenditure on and by means of cards passing through a number of hands and performing a variety of services both in the factory and in the

[†] "The Cost of Manufactures." Captain Henry Metcalfe. New York : Wiley.

counting-house, efforts to establish such a system have not yet been very successful.

Other writers, who have recently advocated a card system, have considered that the difficulty referred to by Captain Metcalfe would be obviated by showing on a cost sheet at regular intervals or balancing periods, the total amounts shown by the cards as expended on all orders in progress at that date, as well as the amount expended on orders finished between that date and the last preceding date on which such entries were made. It is claimed for the card system that it is a labour-saving device, reducing the volume and cost of clerical labour employed in recording the expenditure of labour and material. This claim, if substantiated, has further to be considered in relation to the more detailed attention which has to be given by a manager or principal to the examination of costs recorded on a number of cards, than he has to give to costs recorded in a book in which the entries follow consecutively. This objection is partly met by the institution of a system of "comparison cards," but as the preparation of these cards means a summarising and recording of the contents of a large number of cards each recording one item only, the saving of clerical labour is not very apparent.*

In almost every manufacturing business the item of cartage is a more or less serious factor. If the cartage be for the conveyance of raw material from different parts of the factory the charge is one on manufacturing account, and should be allocated to the various orders. If it be for the delivery of goods sold to

**Cartage
books.**

* Interesting particulars of methods adopted under card systems are to be found in a paper on "Workshop Administration," by Mr. David Cowan, published in the "Transactions of the Institution of Engineers and Ship-builders in Scotland," and in the "Complete Cost Keeper," by Horace Lucian Arnold (Henry Roland). *Engineering Magazine.*

customers an attempt is sometimes made to recoup the cost by debiting the customer with a charge for carriage; in other cases the expense, in view of the vexation and trouble which any other course generally produces, is borne absolutely by the firm and is considered in fixing the price, and regarded as a charge against the profits of the business. In any event the item is one admitting of large economies, by a proper system of registration. If cartage be done by an outside contractor, the necessary records for checking his accounts should be kept by the employé (generally the warehouseman or storekeeper), by whose orders the work is done. The contractor would receive an advice (Specimen No. 51), which should be attached to the account when rendered.

SPECIMEN No. 51.

Cartage advice, _____ 19 .

To Mr. _____

Please supply me with the undermentioned.

No. of Horses.	Description of Vehicle.	Time Required.	Time Arrived.	Time Returned.	Time on Job.	Order to be charged.

Ordered by _____

Signature of Carman _____

• If it be thought necessary, a further check may be

obtained by instructing the gatekeeper to record the times at which carters enter and leave the factory, any delay in loading or unloading being noted. If the **Horses and vehicles.** horses and vehicles are the property of the firm the purchase price of the horses should be debited to a horse account, and that of the vehicles to a vehicle account, and each account should periodically be debited with interest on the amount of the capital sum. The carters should send in weekly a return of the work done by them, and this should be summarised in a Cartage Book. A cartage account should be opened, to which should be debited the wages of the carters, stablemen, the cost of forage, stable expenses, etc., and at regular intervals an amount from the horse account and the van account for depreciation. The depreciation on the horse account can, it is thought by many, be best provided for on the basis of annual revaluation, rather than on the basis of a yearly depreciation rate. The cartage account will of course be credited with the journeys performed at such rates as will equal the amount charged to it. It is only through keeping some such account that the employer can ascertain accurately whether it pays him better to purchase and keep horses and carts than to employ a contractor. Procedure similar in principle should be adopted when transport is by means of motor lorries or similar vehicles. In such case, and until reliable data based on experience is obtained, the important consideration will be the adequacy of the charge for depreciation. In view of the larger capital outlay necessitated by the use of motor vehicles, it is desirable to establish checks on the loading of the vehicles, and to ascertain cost on the basis of a combined mileage and weight factor generally described as a ton mileage basis. •

In view of the need that often arises of giving quotations for goods inclusive of free delivery, and of checking the rates charged by the railway companies, **Freight book.** it is very desirable to record the quotations obtained, or rates paid, for freightage. Under the various Railway (Rates and Charges) Order Confirmation Acts passed in 1891 and 1892, consequent upon the Railway and Canal Traffic Act of 1888, the maximum tolls and charges for various classes of traffic over the various railways have been prescribed. By an Act of 1894, the railway companies cannot increase their rates without public notice, and they can be called upon to justify such increase of rate before the Railway and Canal Commission Court. In checking the accounts or the rates quoted, the classification of the traffic should receive primary consideration. Having regard to the varying conditions of the traffic, it is very desirable to compare the actual rates charged with the maximum authorised, and this can best be done by means of a book ruled as shown (Specimen No. 52). The goods should be delivered to the railway company on a "Consignment Note," prepared by the senders. If a form prepared by the railway company is accepted for use, it should be carefully examined to see that none of its clauses create a special contract with regard to owner's risk or other matters, and that the railway company are not by any of its clauses released from their special or general liabilities.

An exceedingly useful manual, assimilating, comparing, and explaining the Confirmation Acts, together with the scale of maximum rates and charges worked out to 600 miles, has been compiled by Mr. M. B. Cotsworth, and published by Messrs. Bemrose.

Care should be exercised in declaring the weight and character of the merchandise consigned, as the Railway

Claims Consolidation Act prescribes heavy penalties in cases of fraud. Accuracy in these matters is of importance to the consignor, the railway company, and the consignee.

In the case of firms enjoying the advantages of a railway siding a special book should be kept on the same principle as that applied to the Cartage Book just described. If a yearly rental is paid for sidings and trucks this rental and any incidental items should be debited to an account to which is credited any receipts from this source. If the siding is on land belonging to the owner or occupier of the works, and if it has been laid or is maintained by such owner or occupier, the railway rate charged him, either for the receipt or forwarding of goods, should not contain a charge for the provision of such terminus, although the railway company may have a right to make a charge for services rendered at or in connection with private sidings. The Association of Traders known as "The Mansion House Association on Railway and Canal Traffic," carefully watches all proceedings in connection with private sidings and other matters which come before the Railway and Canal Commission Court, and from time to time notify their members of the decisions of that Court in test cases, and through this channel manufacturers can obtain much information enabling them to check the accuracy in principle of the constituent items in the railway rates charged them.

If the trucks are owned by the firm, then their purchase price, together with interest, should be debited to a Wagon and Van account, which should be credited each year with an amount for depreciation, the amount so credited being charged to an account which would in turn be credited with any amount received for the use of the vehicles.

A Wagon and Van Book should also be kept, showing

under the number of the wagon or van, the date it was dispatched, destination, load, date of return, and number of days' demurrage incurred, if any. The book should be so ruled as to permit of the earnings of the wagons and vans being ascertained, and the results tabulated monthly in a form convenient for comparison, as shown in Specimen No. 53. The book should also give the dates on which the wagons or vans are tared. There are considerable variations in tare owing to weather and other causes, and it is desirable that the weight of the vehicle itself should be verified from time to time. The cost of maintenance of wagons and vans should also be kept in the same book, or in a Wagon Expenditure Book. In either case the amount provided or written down yearly for depreciation and obsolescence should be included. The financial results of the working of the wagons and vans would then be obtainable in detail.

When wagons or vans, belonging to manufacturers or merchants, have to be repaired on the railway company's sidings by a wagon-repairing company or by the railway company's workpeople, it is advisable to keep a record of such repair in a Wagon Journey Repairs Book (Specimen No. 54).

It may also be serviceable to allude briefly to the desirability where steam lighters or barges are used, of recording the work done by each lighter or barge, so that full advantage may be taken of any possible economies in cost of transit.

The captain or hand in charge of each craft should be given a Time Sheet (Specimen No. 55).

The Time Sheet may be so ruled on the back as to permit of the recording thereon of any back freights, return cargoes, towage, or other services performed, and

will form the voucher on which payment will be made by the cashier of the amount due to the crew when the journey is finished.

SPECIMEN No. 54.

WAGONS REPAIRED BY

No.	Dates.		Station or siding.	Materials sent.	Nature of Repairs.	Carriage on Materials.	Charges.
	Advised.	Repaired.					
"							

SPECIMEN No. 55.

 TIME SHEET FOR { LIGHTER.
BARGE.
BOAT.

Name of Craft.	Date and Time of leaving Works.	Loaded with	Quantity.	Destination.	Date and Time of Arrival at Destination.	Date and Time Discharged	Date and Time started Return Journey.	Date and Time of arrival at Works.

This Time Sheet should be recorded in a Craft Register (Specimen No 56).

This Register may also usefully contain a record of the earnings of the craft whether from the carriage of raw material to, or finished products from, the factory, the carriage of goods on return journeys for other manufac-

process would be repeated until it was no longer of value as a packing-case but merely as old material.

It is further desirable that the warehouseman should keep an "empties," "cases," or "returns" book, showing the packages sent out and those received back, in order to keep an effectual check upon, and prevent the loss or too rapid multiplication of packages of various descriptions. Credit notes issued or cash paid on the return of these coverings should be specially noted.

This register should always be open to the inspection of the head of the packing-case makers' department, or he should be advised daily by the warehouseman of the packing-cases that have been returned. It is also necessary that the storekeeper should carefully record all the packing-cases received by him from suppliers of goods, and the dates on which they were returned. In the case both of Stores and Stock the cost of coverings should be kept distinct from the prices of the raw material and the finished goods. Provided records are kept of their receipt or manufacture, and return or issue respectively, the articles themselves can be considered as constituents of Stores or Stock, and dealt with on the same principles as regulate transactions in other articles.

There are many other subsidiary books of a similar character the need for which will arise in every factory, but their detailed description is outside the scope of
Coal Book this work. Such are the Coal Books, for recording the contracts for coal and deliveries made, as well as the consumption of coal, when this is systematically charged to each working number, as explained in previous chapters. If this procedure be adopted, the Coal Book may contain on the debit side the turn-out weight of coal received, under

the heading gross, tare, and net, and be compared with the entries in the columns of weights advised. The credit side would give an account compiled from the statement (already referred to) showing how the coal has been used. The difference between the debit and credit sides would represent the balance of coal on hand. The Coal Book and accounts may usefully be summarised monthly (Specimen No. 57), to show the various elements in the price at which it was bought, and is also serviceable for checking the accounts for coal supplied.

SPECIMEN No. 57.

SUMMARY OF QUANTITY AND COST OF FUEL RECEIVED
DURING THE MONTH OF _____ 19__

Date of Purchase.	Colliery or Merchant.	Quality.	Quantity. T. C.	Bought Price.	Discount.	Pit Price.	Wagon Hire.	Boat Hire.	Rates and Tolls.	Net Amount.	Remarks.

The record of the weight of coal and the truck or wagon containing it is first made, both as regards gross, tare, and net, in the Weighing Machine Book kept at the Weigh House. The weights of all vehicles and goods passing over the Weighbridge are entered in this book, a carbon duplicate being sent to the office. A record should also be kept of all inspections or tests of weighbridges, weighing machines, or weights, whether such tests are made by the proprietor or by a firm engaged by him to maintain and test such weighing apparatus. Such register of inspection is of considerable service in connection with any

proceedings under the Weights and Measures Acts. A somewhat similar service is performed by the Machinery Examination Register, recording the dates on which the various machines should be, and were, cleaned and inspected. There are also the Surprise Visits Book recording the visits at irregular periods and unusual hours of the principals or leading officials, with notes and observations as to the condition of affairs at the time such visits were made. Gas, Water, and Electricity Meter Reading Books, which show the readings of the various gas, water, and electricity meters at regular periods, and the consumption during such periods, whilst by the aid of subsidiary meters the consumption in different parts of the factory is obtained and the cost localised. There is also the Brigade or Fire Hose Book, in which is recorded the periodical examination of the hose and apparatus for the extinction of fire, as also the number and position of the fire-buckets, the names and addresses of the men (usually those resident near the works) who constitute the brigade, and the record of the date of consent of the owners of the street mains to the attachment of the hose pipes in case of need; the Casualty Book, containing records of accidents which happen in the factory; the Pattern Book, containing particulars of patterns received and issued, in which each pattern is referred to by its symbol or number, a constituent therein being the office number of the Drawing, the Patterns Ledger showing the original cost of each set of patterns, and the amounts from time to time written off such cost; the Delivery Books, for obtaining carrier's receipts for goods; the Visitors Book, recording the names of visitors to the works, the dates and purpose of such visits, with, in some cases, a portion of the

book set apart for the autographs of distinguished visitors ; the Stores Delivery Diary, used for entering the due dates of stores ordered, and by daily examination leading to systematic reminders to suppliers of overdue goods ; and a variety of other books too numerous to be enumerated.

There are also a number of books facilitating the working and general oversight of the business by the principal or his assistants, which, although they do not necessarily form part of the system of account, afford data for comparisons of expenditure in different periods on general and establishment charges. Among such books may be mentioned the Staff Register, containing the names, addresses, position, and salaries of members of the staff ; the Stationery Register, containing a record of the quantities and qualities of the books, forms, prints and papers ordered, with the names of their suppliers, the costs, with the reference numbers, and code letters or symbols appearing on the forms and thereby enabling the last supplies to be traced ; the Catalogues Issued Register, chronicling the various dates of issue of catalogues, and the names and addresses of those to whom they were issued ; the Advertisement Contract Register, containing particulars of contracts entered into or orders given for advertisements, with specimens of the advertisements, and the rates at which they are inserted ; the Notices Book, containing copies of all notices issued to the staff or members thereof, or posted in the works, with regard to the conduct of the business ; the Licences Books, recording all licences taken out or to be taken out, whether in connection with the storage of gunpowder or other explosives, or inflammable oils, for the employment of male servants as coachmen, for light locomotives, or for any purposes for which licenses have to be taken out ; the Boiler Inspection Book, containing records

of the inspection of the boilers, and a copy of the report which, under the Factory and Workshop Act, has to be entered in or attached to the general register of the factory or workshop, showing the result of such inspection by a competent person.

A reference to books relating to sick, provident, superannuation, and similar funds might be looked for in this chapter, but inasmuch as these are generally conducted by a committee of those interested, a description of the books required does not fall within the limits of this volume. For the convenience of the employes, their subscriptions to these funds may, as described in Chapter II., be deducted from the amounts due to them as wages, but at this point the connection of the funds with the factory books generally ends. The disposal of the amounts deducted from the wages of employes on account of fines, rests of course with the principal, in the absence of any other arrangement with the employes. If, as is often the case, they form a contribution to the sick fund, the necessary entries are made in the commercial books.

The books which have to be kept under the Factory and Workshop Act also require to be mentioned. We do not, however, consider it necessary to describe them in detail, as all registers, books, forms, certificates, etc., prescribed by the Secretary of State in pursuance of the Act can be purchased ready for use.* The Act deals with the sanitary conditions of factories and workshops, and with the safety of the work-people, fixes the hours of work and of meals, prescribes holidays, provides for the education of children employed in factories,

* They are published (by authority of His Majesty's Stationery Office) by Messrs. Shaw & Sons, Fetter Lane, London.

requires certificates of fitness for employment to be obtained, and contains regulations as to the investigation of the cause of accidents. The Act also contains conditions as to overtime, night work, domestic employment, etc., and special provisions for particular classes of factories and workshops.

It is also desirable that one or more of the responsible officials at the works should be well posted as to the provisions of the Public Health Acts, as also in the bye-laws of the local authorities of the district particularly those relating to the emission of black or other smoke, and as to sanitation. Copies of the local bye-laws should either be posted in the works, or supplied to the foremen or leading hands. Where electricity is used, the regulations issued by the Home Office with regard to such user in factories should be posted in the offices of those responsible for such regulations being effectually carried out, as should also the regulations published by the Home Office under the Factory and Workshop Act (1901), as to the use of locomotives and wagons on private lines and sidings.

CHAPTER XI.

METHODS OF REMUNERATING LABOUR.

WHILST the object of this book is to show how the accounts pertaining to a factory can be kept so as to afford information to manufacturers as to the cost of each article produced, and the results of individual transactions, and the aggregate results of the business, the adoption of the methods described yields data of great value as to the economic aspect of the system of piece-work or payment by results, of overtime, of the respective costs of machinery and manual labour, of the comparative results of the use of machinery of different classes or powers, the relation of labour and machinery to fixed capital, and the bearing of these various matters on the modes of remunerating labour. In conclusion, we propose, therefore, to refer briefly to the interdependence of these subjects, and to the views of some of the leading authorities on labour questions as to possible developments in the direction of the general adoption, or at least the recognition, of the principles underlying industrial partnerships and co-operative production.

Economic considerations. To pay overtime rate for labour which could be more efficiently performed at the normal rate is obviously not economical on the part of an
As to overtime.

employer, who, indeed, seldom resorts to it save in cases of emergency and of time contracts.

The interest on fixed capital and the provision against depreciation are factors in the cost of production which have a constant tendency to increase, and these, indeed, are to a very large extent independent of the number of hours employes are at work.

As to fixed capital and double shifts.

Full advantage of the economies arising from the use of machinery is not likely to accrue until the principle of working double or treble shifts is more extensively adopted than at present. By the employment of two or three sets of men, each working eight hours a day, considerable benefit would accrue to the community. The objections commonly urged against the system are such as can be, and have been, surmounted; and experience shows that the aversion with which it is regarded by workmen is as transitory as has been their dislike to the system of payment by results, known as piece-work, which is becoming

As to piece-work.

more general in trades in which individual workmen are able to work independently of each other, and where the piece-work rates can be fairly calculated and the work properly registered. An extensive and successful piece-work system is not, indeed, practicable where the solidarity of labour is so great that each workman cannot do his work independently and without the assistance of others, but where there is much division of labour piece-work is generally possible, although the parts made under that system may require the combination of several workpeople to complete or to adapt them to their final purposes.

Obvious as are the economic advantages resulting from the adoption of piece-work, it is probable that the quality of the work performed under it is either stereotyped or •

lowered, and that the greatest advantage can only be obtained by interesting the worker in the quality as well as the quantity of his work. It has been well pointed out that "two equally capable and energetic men, one of whom is working on his own account and the other performing at fixed wages services which have for their object the enrichment of an employer, notoriously present two very different standards of activity. The former is full of enterprise and alacrity; the latter is wont to be slack and unaspiring and disinclined to make any effort bodily or mental not included in the average standard of performance recognised by his fellows. Where piece-work prevails, the above remark ceases to be applicable as far as mere quantity of production is concerned; but the contrast remains as great as ever in respect of the alertness of eye and brain to avoid waste of materials and injury to plant and tools, to suggest reforms in current technical procedure, to improve quality, and, generally speaking, to attain an enhanced commercial result by other methods than piling up a maximum of such work as will only just pass the scrutiny of the examiner appointed to check it. In short, full exertion of bodily and mental powers is obtainable only from men whose own interests are fully engaged in the result of the work to be performed."* In the large majority of cases, so long as it is to the financial interest of the employé to "speed up," he will do so whatever may be the fashion of his shop in this respect.

Some of the trades unions, however, have for one of their objects the limitation of the principle of piece-work, and if possible its absolute prevention. They urge that employers generally base the calculation for the piece-work

* "Profit-sharing between Capital and Labour." Sedley Taylor. London :
Kegan Paul, Trench & Co.

rates upon the standard established by the quickest and strongest workmen, and that by these means the weaker men, in order to earn the wages necessary for bare subsistence, have to exert themselves to an undesirable extent ; and that the rate of wages usually paid for piece-work is often reduced by the employers almost in direct proportion to the efforts of the workmen. The fact that payment by the piece offers inducement to work being done with rapidity, to the sacrifice of finish, probably accounts for the large amount of work which might be done on the piece-work method being still paid for by the day, skilled labour, rather than rapidity of output, being required.*

It has been pointed out by Sidney and Beatrice Webb † that the opposition by Trade Unionists to piece-work in certain trades arises mainly from the difficulty, owing to the character of the operations performed in these trades, of obtaining or maintaining a uniform or standard rate of remuneration if piece-work is introduced, whilst in other trades the standard rate is best maintained by the adoption of piece-work rates. From tables prepared in 1896, it appeared that out of 111 principal Trade Unions, 49 insisted on piece-work, 24 recognised in various departments both piece-work and time-work, and 38 insisted on time-work. The society with the largest membership in the third section was the Amalgamated Society of Engineers, whose opposition is, however, now considerably modified. One of the terms of settlement in January, 1898, of the great engineering strike, embraced under the term "Conditions of Management" the following clause: "The

* For a full and fair statement of the advantages of the method of piece-work, and of the objections to it, we refer to "Methods of Industrial Remuneration," by David F. Schloss. Williams & Norgate, London.

† In "The Standard Rate," in *Economic Journal*.

right to work piece-work at present exercised by many of the federated employers shall be extended to all members of the federation, and to all their union workmen."

In the United States of America the opposition of the International Association of Machinists is by no means relaxed, and its official representative some time since declared that the Association will never be a willing party to the propagation of piece-work. At present, in the States, more than in the United Kingdom, the original defects of the piece-work system are being modified by the intensified or differential piece-rate system, and the premium plan of labour remuneration. The incentive to quicken production being diminished by the "dropping" of rates when piece-work balances have been in the opinion of the employer too largely in favour of the employé, some employers have adopted the differential rate system, which "consists in offering for the same job a high price per piece if the work is done in the shortest possible time and in a perfect condition, and lower prices per piece for slow and imperfect work." * In these cases it is not usual to fix the rate primarily on the records which show the shortest time in which the same or similar work has been done, but on the basis of a calculation by a rate fixer as to the time that the work under ordinary and average conditions would occupy with provision for higher rate for shorter time, subject to there being no deterioration in quality. It is claimed for this system that it maximises output, by leaving to labour the extra reward of skill and application. It has stood the test of time in various works, among others those of the Midvale Steel Company of Philadelphia, where it was introduced by Mr. Fred W. Taylor, with whose name the system is often associated.

* *Engineering Magazine.*

A modification of this method was introduced by Mr. Gantt at the works of the Bethlehem Steel Co. Its distinctive characteristic is that if the worker does not reach the standard time, he is paid only 75 per cent. of normal wages for the excessive time, provided the bonus earned permits of the imposition of this penalty. The premium plan, which has been successfully adopted in many works, was the result of much care and thought given by Mr. J. A. Halsey to the problem of reconciling the divergence of interest between employer and employed in quickening production. The basis of this plan, often described as the time share method, is the continuance of payment by time, modified by the expectation of a certain minimum product within that time, with a bonus or premium for lessened time, which is, of course, equivalent to increase of product. The direct labour gain to the employer consists of the difference between the premium and the wages cost saved. The division of the gain as between employer and employé presents, of course, some difficulty. In some cases a certain proportionate part of the gain is allotted to the employé. Mr. Halsey himself adopts the principle of being liberal with the time rather than the premium rate. In some cases special grants are made to foremen, proportional to the number of men earning a bonus in the respective shops. In the Emerson Efficiency System as applied in the shops of the Santa Fé Railway, the characteristic features are the revision as part of the daily shop practice of any scheduled prices which appear to be too high or too low, and this without lessening the earning power of the worker. Another characteristic is the establishment of a general monthly efficiency record covering the shop as a whole, and the employment, instead of "speeders" and "task-setters" of

instructors, who having determined as nearly as possible the standard time that a particular piece of work should take, show the employé how it should be worked out practically.

The premium plan is in the main identical with the system adopted in many factories and works in the United Kingdom under the name "gain-sharing," which has been defined as * "an arrangement under which a fixed or minimum wage is supplemented by a premium proportionate to the efficiency of the workman, so far as this exceeds a specified standard." Thus under the Progressive Rate method, introduced by Mr. Rowan of Glasgow, the Halsey plan has been modified by the fraction of the gain receivable by the employé being varied so as to make the rate of earnings on the work (time wages plus premium) exceed the time wages rate by the same proportion as that which the saving in time effected bears to the standard time.† A further variation is to be found in the Reference Rate method, in which a total wages payment calculated upon a time allowance is fixed for a given quantity of work, and if the employé completes this in such time that his day-rate wages come to less than the Reference Rate, a share of the saving is allotted to him.‡

The Trades Union Congress in 1909 appointed a special sub-committee to report on the premium bonus system. This Committee reporting early in 1910 state that the system which was introduced into this country at the

* "Profit-sharing and the Labour Question." By T. M. Bushell. London: Methuen.

† An interesting account of the variations of both systems as adopted in the Imperial Dockyards and other establishments in Germany, is given in an article by Mr. F. D. Schloss on "Gain Sharing in Germany," in the *Economic Journal*, December, 1905.

‡ Interesting comparisons between the Time Share, the Progressive Rate, and Reference Rate methods are given by Mr. H. Culpin, A.S.A.A., in his lecture on Wages Systems.

beginning of the present century, is condemned by all who have had practical experience of its working. They urge that it destroys the principle of collective bargaining, that it is destructive of trades unionism, that it encourages disorganisation, causes unemployment, and leads to scamping of work.

With regard to the question of the relative pecuniary value of task-work as against time-work, each and every case must be decided on its own merits; and where the system is adopted tentatively, the Piece Work Analysis Book, referred to in Chapter II., is especially valuable, as showing whether labour by time or by piece is the more economical.

The regrettable difference of view between capitalists and workmen as to these matters prevents the attainment of the highest degree of efficiency in production, and is therefore to the prejudice of all interests, but it is not possible "to expect any marked improvement in the general economic condition of the country, as long as the production of wealth involves a keen conflict of opposing pecuniary interests. The forces which ten men can exert may be completely neutralised if they are so arranged to contend against, instead of assisting each other. Similarly, the efficiency of capital and labour must be most seriously impaired when, instead of representing two agents assisting each other to secure a common object, they spend a considerable portion of their strength in an internecine contest. All experience shows that there can be no hope of introducing more harmonious relations, unless employers and employed are both made to feel that they have an immediate and direct interest in the success of the work in which they are engaged." *

The recognition of this fact by all who have studied

* "Pauperism." Henry Fawcett, M.P. London: Macmillan.

the labour question in this country renders it incumbent on **Views of employers and accountants connected with authorities on labour questions.** industrial undertakings, to consider carefully the possible tendency of the modern factory system, and it is therefore desirable in a book dealing with Factory Accounts to mention, however briefly, the views of some authorities—theorists and practical men—upon this subject ; especially as whatever the next stage in the evolution of industrial organisations may be, there can be little doubt that the tendency must be more and more to greater detail and accuracy in the preparation of accounts which form the basis of apportionment, as between partners, or as between rival and contending interests. The feeling of conjoint or mutual interests, referred to by Professor Fawcett, can only be developed by the employé feeling that he is a participator in due share of the benefits arising from greater exertion, economy and efficiency on his part ; and by the employer recognising that in the exercise of those faculties the employés have the power of augmenting old, and creating new, sources of profit. As has been well pointed out by Lord Brassey: “ A more complete identity of interest **Lord Brassey.** between capital and labour is earnestly to be desired. In so far as that consummation is to be accomplished by the workmen themselves—and they must be active instruments in their own advancement—our hopes for the future rest on co-operative industry. Their efforts must commence with the simplest forms of industrial organisation—those which require the least amount of capital, and are most free from the fluctuations so painfully felt in international commerce. In industries which cannot be organised so readily on the co-operative plan, the extended operations of the joint-stock companies will secure the publication of profits, and afford opportunities

to the workmen for participation, as holders of shares, in the profits of capital." *

An extension of the principal of joint-stock enterprise, which affords at present the most available opportunities for the investment of small sums, might serve **Joint-stock enterprise.** to operate in the direction desired if only the working classes could avail themselves of its advantages ; but in this respect there is little encouragement to be gleaned from the past, although the laws which have been in force for some years afford facility for the co-operation of labour with capital. Great expectations have been founded upon the facilities possessed in some cases by working men to become part proprietors in the businesses in which they are engaged, but industrial co-operative associations on a large scale have yet to be established.

In the opinion of the late Professor Jevons, there could "be no doubt that the soundest possible solution of the labour question will eventually be found in such **Professor Jevons.** a modification of the terms of partnership as shall bind the interests of the employer and workman more closely together. Under such a system the weekly wages would be regarded merely as subsistence money, or advances which the employer would make, to enable the labourer and his family to await the completion of the interval between manufacture and sale. The balance of the value produced would be paid at the end of the year or half-year in the form of a dividend or bonus, consisting in a share of all surplus profits realised beyond the necessary charges of interest, wages of superintendence, cost of depreciation and capital, reserve to meet bad debts, and all other expenses of production for which the employer

* Report of the Industrial Remuneration Conference. London : Cassell & Co.

can fairly claim compensation. Under the name of Industrial Partnership such an arrangement has been experimentally tried in England, and has been subject to a good deal of adverse discussion."*

This adverse criticism is to a large extent due to the failure in several cases, of the tentative trials of the system of co-operative production, but the conditions under which the tests were made were unfavourable, and the circumstances in each case were not such as permit of any general or definite rule being deduced from the result. †

Notwithstanding some unsuccessful attempts in England to establish industrial partnerships it must not be assumed that this country is unable to show any signs of encouragement to the advocates of this principle. On reference to the tabulated returns of the Co-operative Productive Societies it will be seen that examples of the successful working of the system are not confined to other countries, for there has been a considerable number of endeavours by employers and employes in England to work on profit-sharing and on co-partnership lines. It is, however, on the Continent that the principle of industrial partnerships has made the greatest strides, and in France, according to Mr. Sedley Taylor, "the

* "The State in Relation to Labour," chap. x., p. 142. By W. Stanley Jevons. London: Macmillan.

† Of Productive Co-partnership Societies, strictly so-called, there were in 1909, in England and Wales, 108 small organisations with a capital of £722,046, and in Scotland 6 large ones with a capital of £1,302,328. The Societies in Scotland included the large organisation working for the federation of Consumers. *Co-partnerships*, August, 1910.

Of Collective Trade Agreements there were in 1910 some 1696 known to the Board of Trade, affecting 2,380,000 people. Thirty of these cases were on Sliding Scales bases, 563 on Piece Price Lists, and 1103 on various bases. The three most important agreements affected one million people. Report to Board of Trade. Schloss.

principle of participation, organised under a great variety of different forms adapted to differing industrial conditions, has been applied with success to almost every class of undertaking, productive, distributive, or purely administrative."

The system "consists in assigning to the employed, over and above their wages paid at the ordinary market rate, a part of the net profits realised by the concern for which they work," and the material successes achieved are stated to have been little short of marvellous.

The economic basis upon which the principle rests is best stated in the words of Mr. Taylor himself. "The fund on which the participation draws is the **surplus profits realised in consequence of the enhanced efficiency of the work done under its stimulating influence.** Such extra profit is, therefore, obtainable whenever workmen have it in their power to increase the quantity, improve the quality, or diminish the cost price of their staple of production by more effective exertion, by increased economy in the use of tools and materials, or by a reduction in the costs of superintendence. In other words, the surplus profit realisable will depend on the influence which manual labour is capable of exerting upon production. Evidently, therefore, this influence will be greatest in branches of industry where the skill of the labourer plays the leading part, where the outlay on tools and materials bears a small ratio to the cost of production, and where individual superintendence is difficult and expensive. It will, on the contrary, be least effective in industries where mechanism is the principal agency, where interest on capital fixed in machinery is the chief element of cost price, and where the workmen assembled in large factories can be easily and effectively superintended." *

* Profit Sharing." Sedley Taylor, M.A. London: Kegan Paul, Trench & Co.

The methods by which the share belonging to the employé under a system of industrial partnership is determined vary with different trades, and are fully described in the various reports which have from time to time been issued by the Board of Trade on Workmen's Co-operative Societies, as also in the annual reports of the "Labour Association for promoting Co-operative Production based on the Co-partnership of the Workers." The three main divisions are—(1) Where the workmen's share of profits is distributed in the form of an annual cash bonus; (2) where that share is invested for the benefit of the employé; (3) where part is annually distributed among the workpeople and part invested for their benefit.

More recently the term "industrial partnership" has come to be applied to those cases in which the employed share with the employer in the management of the business. A notable example of this being found in the case of the South Metropolitan Gas Co., whilst there are now some fifteen gas companies with capitals aggregating over £4,000,000, who have adopted the system of enabling workmen to become shareholders. In the case of the Gas Light and Coke Co. some 10,000 men were affected by such a scheme. The chairman of the South Metropolitan Gas Co. pointing out that his company initiated the system in 1889, states that it is now more firmly established than ever, that it has engendered a spirit of loyalty, and has been largely responsible for the success of the company. Among co-operators this system is often described as one of co-partnership, the term first applied to it by Mr. E. O. Greening, and is defined as a system in which the employé of a "business have, in right of their labour, a substantial share fixed in advance on the profits thereof, and in which

they have also an effective share in the capital, control, and responsibilities."

The term "profit-sharing" is now more particularly applied to those arrangements under which, to quote the definition of Mr. F. D. Schloss, "an employer agrees with his employes that they shall receive in partial remuneration of their labour, and in addition to their ordinary wages, a share fixed beforehand in the profits of the business." This definition is substantially in accord with that adopted by the International Co-operative Congress at Dec., which declared that, "by a share of profits is meant a sum paid to an employe in addition to wages out of the profits, and the amount of which is dependent on the amount of those profits."*

It is the absence of mutual confidence between employers and employed which is the greatest obstacle to the success of industrial partnerships. The most widely-spread objection on the part of the employes is, that they have no certainty as to an employer's profit, no means of ascertaining its extent without an investigation of the accounts, and even in many cases when information has been required for boards of conciliation or for arbitrators, and where the result would have been communicated by the investigator to an umpire only, such an investigation has been refused.

But this difficulty could be overcome of course by an inspection of the books being confidentially made by a sworn accountant, always provided that, as pointed out in a previous chapter, the groundwork of the system of accounts is such that each employe feels he is contributing to the attainment of

* As to the trend of the co-operative ideals, the reader is referred to an article by "X" in the *Economic Journal*, March, 1902, on "The Present Status of Co-operation."

accurate records of cost and his general confidence in the manner in which the accounts are kept.

The other objections to the adoption of the principle of industrial partnerships, sometimes advanced by heads of firms and founded upon a "dread of the extra trouble of management and account-keeping thereby entailed,"* afford further exemplification of the need of systematic and accurate methods of dealing with Factory Accounts; and of the fact that their principles are so little comprehended as to be considered inapplicable under any new set of conditions. Our contention is that these principles have a scientific basis, rendering them applicable to any condition of industrial organisation; that to demonstrate their economic results is peculiarly the province of the accountant, and to the attainment of that end a clear and complete system of Factory Accounts is essential.

* "Reports of Her Majesty's Representatives Abroad on the System of Co-operation in Foreign Countries." Blue Book, Commercial, No. 20. London: Hansard.

Much interesting information is also to be found in the official reports published from time to time at the International Labour Office at Basle by the International Association for Labour Legislation which was founded in 1900.

APPENDIX A.

NOMENCLATURE OF MACHINE DETAILS.

BY OBERLIN SMITH, PRESIDENT OF THE FERRACUTE MACHINE
COMPANY, BRIDGETON, N.J.

*A Paper read before the American Society of Mechanical Engineers,
and reprinted by the kind permission of the Author.*

THAT the nomenclature of machinery, and of the tools and apparatus with which it is constructed is, in this country, in a state of considerable confusion scarcely needs demonstrating. If we look from an international point of view, and include the other English-speaking countries—Great Britain and her colonies—the confusion becomes worse confounded. A reform is destined, in due time, to come, doubtless to be promoted in great degree by such societies as ours. This reform movement cannot be begun too soon, and should aim at giving brief and suggestive names to all objects dealt with,—each object to have but one name, and each name to belong to but one object. A simple method of beginning such a reform would be a common agreement among all our engineering schools to use each technical word in but one sense, and with no synonyms. A lesser field of reform and one which lies more particularly within the jurisdiction of individual manufacturers, is the comparative designation of a number of sizes or kinds of the same machine. There is now no common understanding whether a series of sizes shall be numbered or lettered from the largest down, or from the smallest up. The latter is undoubtedly the most natural and suggestive method, but usually becomes confused by want of careful forethought (when starting a series) in providing “gaps” for the insertion of future sizes. If a numerical series has been already started and become commercially established, the only systematic way to insert new sizes

(either at the beginning or through the middle of the series) is to use fractional numbers. This, though awkward in sound and appearance, seems to be the only means of suggesting the comparative size of the article by its name. The use of arbitrary higher numbers between the other is, of course, worse than no numbers at all. The use of a series of letters does not supply this fractional loophole of escape, the euphony of A-and-a-half, K-and-three-quarters, etc., being somewhat doubtful. Another method in much favour is the use of "fancy" names such as "Diminutive Giant," "Eureka," "Firefly," etc. These are far preferable to confused numbers as they are not intended to convey any ideas between manufacturer and customer, and admirably succeed in their purpose. All this is a very difficult subject to deal with, and one in regard to which we can scarcely hope for any exact system. We can but point out to manufacturers two general principles to be followed: 1st, of leaving abundant *gaps*—that is, let a regular series run 10, 20, 30, 40, etc., instead of 1, 2, 3, 4, etc.; and 2nd, of using the smaller numbers for the smaller objects. The second is similar in idea to the well-known Philadelphia house-numbering system, which has worked so admirably in practice, and which has been copied by numerous other cities.

The two foregoing paragraphs are intended respectively as but casual allusions to the technical and commercial nomenclature of machinery in general. The subject is too elaborate to be treated at length in this paper, the main purpose of which is to set forth the results of the writer's experience in establishing a system of names and symbols for all the component parts, commonly called "details" of machines, or, in fact of any manufactured articles.

That some such system is necessary, no engineer who has attempted to manufacture machinery by the modern system of duplicate (or approximately duplicate) parts, will, for a moment, question. The necessity for a specific name for each piece, which name is not, never has been, and never will be, used for any different piece of the same or any other machine, is evident, simply for purposes of identification. This identification is required mechanically at almost every stage of production. The name, or a symbol representing it, should be marked upon the drawings, the patterns, and the special tools pertaining to each piece, and, when convenient, upon the piece itself. Commercially, it is required on time cards and in indexes and pattern lists and cost books as pertaining to production. Pertaining to sales these names or symbols must appear in illustrated price lists, and in orders by and charges

to customers. This, our modern method of repairs, by selling duplicate parts, renders imperatively necessary.

The requisites for a good system of names and symbols are : 1st, *isolation* of each from all others that did, do, or may exist in the same establishment ; 2nd, *suggestiveness* of what machine, what part of it, and if possible, the use of said part—conforming, of course, to established conventional names, as far as practicable ; 3rd, *brevity*, combined with simplicity. Of the importance of isolation to prevent mistakes and confusion ; of suggestiveness to aid the memory ; of brevity to save time and trouble, it is hardly necessary to speak.

Regarding the systems now in use in our best shops, this paper will not attempt detailed information. It is understood that the names are more or less scientifically arranged ; depending, of course, upon the amount of study and the quality of the brains that have been expended upon them. In cases where symbols are used, supplementary to the names, they usually consist of letters or numbers, or (oftener) a combination of both. Many of them (both names and symbols) fail in symmetry and suggestiveness, because little attention has been paid to the names of the machines themselves, as regards the serial consecutiveness hinted at in paragraph 2nd. The quality of brevity often suffers, severely, because the name and symbol must, in most cases, each have the machine name prefixed, to secure their perfect isolation. The latter quality is rarely dispensed with, simply because the manufacturer's pocket would be too directly touched by the expensive resulting mistakes. A perusal of some machinery catalogues which give detailed lists of parts is very harassing to a systematic mind. They are apt to derive one part name from another, prefixing the latter as an adjective each time, until some such pleasant title as "lower-left-hand-cutting-blade-set-screw-lock-nut" is evolved. If there are symbols provided, they consist of some unknown combinations of letters part way down the list, and then change to arbitrary numbers, or perhaps to nothing at all. It will often be noticed also that no particular order appears to be followed in numerical arrangement, similar parts being scattered at random through the list.

The scheme to be described further on has been evolved gradually from the experience gained in managing a growing machine business. This scheme is far from perfect, and is probably inferior to others which have not been made public ; but it seems to answer the purpose aimed at, viz., a comprehensive and elastic system which will accommodate itself to an unlimited

growth and any variation in quantity or kind of goods manufactured. This, the methods we first tried would not do, being too limited in their scope.

It should be here explained that the word "we," as just used, refers to the above-mentioned machine works, with which the writer has long been connected; and the scheme in question will be spoken of as "our symbol system." To further define terms: "machine name" and "machine symbol" refer respectively to the name and symbol of the whole machine—or other article of manufacture; for it will be noticed that the system is applicable to almost any products, except those of a textile or chemical nature. "Piece name" and "piece symbol," in like manner, refer to the separate pieces of which the whole is composed. The terms "detail," "part," and "piece," have so far been used synonymously. It is doubtful which is really the best to establish as a standard, but we have adopted "piece" as best expressing the idea of one piece of material, reduced to the last condition of subdivision. In our practice, exceptions are made to this requirement of homogeneousness in such cases as chains, ropes, belts, etc.,—also material glued or welded together—in short, anything which may (like a man) be called *one piece*, because it is not intended ever to be taken apart. The character for equality (=) will be used to show connection between a name and its symbol. A brief glance at the history of our system shows that at first we (like many others) hit upon the plausible idea of using numbers for machine symbols and letters for piece symbols. The numbers were somewhat "gapped," but not to such an extent as we now should practise. Examples: If four sizes of pumps were symbolled 1, 2, 3, and 4, their barrels might = 1-A, 2-B, etc., and their handles = 1-B, 2-B, etc. If the next product made was a series of lathe dogs, they would probably be symbolled 11, 12, 13, etc. Their frames would = 11-A, 12-A, etc., and their screws, 11-B, etc. This all worked beautifully until the products became so complicated as to contain more than twenty-six pieces! After tampering a little with the Greek alphabet (which seemed calculated to scare our new workmen), and trying to use a mixture of small and capital letters (which looked too near alike), we fell back upon the clumsy device of repeating the alphabet, with letters doubled or tripled.

When we finally abandoned the above plan, several methods were carefully studied. The next most obvious was to use letters for machines and numbers for pieces. This allowed any quantity of the latter, but limited the machine to twenty-six even with no gaps

provided. A certain modification of this method is, perhaps, more in use than any other system. In it letters are used for different sizes or styles of a certain kind of machine, and used over again for some other kind *ad infinitum*. This answers the purpose, because there are not likely to be more than twenty-six varieties of one machine. It has, however, the fatal objection of requiring the whole machine name prefixed to each symbol, in all cases where the symbol stands alone, and does not happen to be written with the others of the set in tabular form. As the general name of a machine usually consists of at least two words, a complete piece symbol becomes too long for convenience in labelling. Examples: Force pump, K--26; Lathe dog, H--2.

Another system consists in using numbers for the machines and numbers for the pieces. This gives isolation and brevity, but no suggestiveness. A serious objection to it is the danger of blurring the numbers together, or of transposition in writing or reading them; also in the fact that either number cannot be used alone, as it can in the case of letters and numbers.

A similar system to the above consists in the use of letters for both symbols. It has the same disadvantages, and the additional one of a limitation in the quantity of letters at disposal.

Our system, as finally decided upon, is as follows: Machine names and piece names are determined by the designer, in general according with the principles already pointed out, being, of course, made as brief and suggestive as possible, with no two machine names alike, and no two piece names alike in the same machine. In this nomenclature no positive laws can be followed but those of common sense and good English. A *machine symbol* consists of a group of *three arbitrary letters*—capitals. A *piece symbol* consists of an arbitrary *number* and follows the machine symbol, connected by a hyphen; thus FPA-2 might symbolise the force-pump handle before alluded to—smallest size. The machine symbol may, be used alone when required, as FPA.

As thus described, these symbols fully possess the qualities of isolation and brevity. To make them also suggestive, some attention must be paid to what letters to use. In practice, we aim to make the first two letters the initials of the general name of the machine, and the last letter one of an alphabetical series which will represent the sizes of the machine. An example of this is shown in the symbol for the smallest-sized force pump FPA. If there is any chance of a future smaller or intermediate size, gaps should be left in the alphabetical order. This "initial" method cannot always be strictly followed, because of such duplicates as

FPA for force pump and foot press. The remedy would be to change one initial for one beginning some synonymous adjective, that is, foot presses might be symbolised TPA, assuming that it stands for treadle press. Usually the least important machine should be thus changed. From this it will be seen that, in defining the theory of this scheme, the words "arbitrary letters" were purposely used. The idea is to make the system thoroughly comprehensive. There might be such a number of machines having identical initials that the letters would be almost arbitrary. In practice, the designer can usually succeed in making the symbols sufficiently suggestive.

In considering how many letters to use in a symbol, considerations of brevity advised two, suggestiveness three or four. Two letters did not allow of enough permutations, nor indicate well enough the kind and size of machine. Three seemed amply sufficient in the first respect, as it provided over 17,000 symbols. If, for any reason, in the future four letters should seem desirable, the addition of another would not materially change the system. If three letters hyphenated to a number of one, two, or three digits should seem bulky, remember that this symbol can stand by itself anywhere and express positively the identity of the piece. Its comparative brevity is shown by comparing the second and third columns of the following table (A). In the different lines an idea is given of the application of the system to a variety of products not usually made in any one shop.

TABLE A.

1st.	2nd.	3rd.	4th.	5th.	6th.
Full name of machine and piece.	Our Symbol for it.	Symbolic name as often used.	Characters in Col. 2.	Characters in Col. 3.	Excess of Col. 5 over 4.
6" x 4' Engine lathe, spindle head	ELA-4	Engine Lathe, A-4 . .	4	13	9
No. 4 Power Press, frame	PPD-1	Power Press, D-1 . .	4	12	8
7" x 14" Steam Engine, crank shaft	SEG-51	Steam Engine, G-51 . .	5	14	9
Buckeye Mowing Machine, left axle nut	MMD-81	Mowing Machine, D-81	5	16	11
No. 3 Glass Clock, main spring	GCC-105	Glass Mantel Clock, C-105	6	20	14
One-hole Mouse Trap, choker wire	MTA-3	Wooden Mouse Trap, A-3	4	17	13

TABLE B.

FPL		No 3 FOOT PRESS.			Weight.		
Piece No.	Same.	Piece name.	Material	Quantity.	Rough weight.	Finished weight.	Aggregate finished weight.
1	.....	Base	Cast Iron	1	220	200	200
2	.....	Gib	"	1	10	9	9
3	.....	Side Bar	"	1	45	40	40
4	.....	Front Leg	"	2	30	30	60
5	.....	Back Leg	"	1	40	40	40
6	.....	Treadle	"	1	17	15	15
7	.....	Lever	"	1	85	80	80
8	FPH-8	Lever Weight	"	4	5	5	20
9	.....	Pitman	"	1	12	10	10
10	FPH-10	Clamp Sleeve	"	2	3	2½	4½
21	.....	Lever Pin	Steel	1	2½	2	2
20	FPH-20	Treadle and Pitman Bolt	Iron	3	1	1	1½

Table B is a specimen of part of a page of our "Symbol Book," in which are recorded any machines which have arrived at such a state of perfection and saleability as to be marked "Standard" on our drawings.

This table almost explains itself. The piece numbers in 1st column do not have the letters prefixed, because the latter stand at the top of the column. "Same as" means that the piece is identical with a piece belonging to some other machine, and can be manufactured with it. If it is common to several machines in a set, the smallest of the set in which it occurs is given. The "quantity" column tells the number of pieces of a kind required. The last "weight" column, added upward, shows total weight of machine. Piece numbers are "gapped" after each kind of material and also at the ends of "groups" as described further on. This is to allow for future changes and additional pieces; also that other nearly similar machines, having more pieces, may in general have the same piece numbers.

The order in which the pieces are numerically arranged cannot follow positive rules in all cases. In our list of instructions (too long to be here quoted) we direct a classification by *materials*. In each class we group pieces of the same general character, in regard to the prevailing work to be done upon them, and in natural "machine shop" order; *i.e.*, first planing, then drilling, or boring, then turning. We also aim to place the heaviest and

most important pieces first. Between each group we "gap" the numbers.

Regarding position in naming pieces, we assume a front to the machine (where the operator is most likely to be placed), and define direction tersely as "forward," "back," "right," "left," "down," "up." The adjectives of position prefixed to piece names are, of course, derived from these words, as "upper," "lower," etc. A perpendicular row of similar pieces, say five, would be rated "upper," "second," "third," "fourth," and "lower." A number of different-sized pieces of similar name may, in like manner, be prefixed "smallest," "second," "third," etc.

Before closing, a brief reference to certain (two) supplementary symbols may not be out of place. One is a small letter after a piece symbol (as FPL-21-a), signifying that the piece is obsolete, the standard FPL-21 having been altered.* After a second alteration, the last obsolete piece would be suffixed "b," and so on. Thus duplicate pieces of old-style machines can be identified and supplied to customers. The other symbol referred to is to indicate the number of the operation in the construction of a piece, and is written thus: FPL-21-1st, FPL-21-2nd, etc. Its use is of great value on detail drawings, time cards, and cost cards. It enables any operation (no matter how trivial), on any piece of any machine, to be identified by a symbol alone. An *operation* we define as any work which is done by *one person at one time*, before passing the piece along and commencing upon another.

* In a letter to the authors, Mr. Oberlin Smith writes: "I have not yet changed the system in my own practice, and do not see anything which I think it desirable to change except the first *supplementary* symbol mentioned in the first part of the last paragraph. The principle there mentioned is not strictly logical, as it gives the same symbol to a piece in present use which in a previous year was given to a somewhat different one now obsolete. This matter I intend to modify somewhat, but have not yet had time to do so."

APPENDIX B.

THE INCOME-TAX ACTS

IN THEIR BEARING UPON THE PROFITS OF MANUFACTURE.

THE Income Tax is, as is well known, assessed, according to the provision of a series of Acts of Parliament, by boards of local commissioners in conjunction with Government officials, known as "Surveyors of Taxes." The power of assessing and determining the liabilities of taxpayers under Schedule D as hereafter described, is vested in the District Commissioners of Taxes and the Commissioners for special purposes. All returns under the Income Tax Acts are subject to the examination and objection of the Surveyors of Taxes, prior to consideration by the Commissioners. The District or Local Commissioners are appointed to act for particular districts. They are subject to property qualification, and their office is an unpaid one.

The Special Commissioners are paid officials appointed by the Treasury, and their powers are exercisable throughout the United Kingdom.

In case of overcharge, the most convenient course is to communicate or obtain an interview with the Surveyor of Taxes as early as possible, but as the language of the Acts is, although wide in the main, very precise in meaning, and many of the doubtful points have been interpreted by the decisions of the Courts, there is no very great discretion left to those who administer them. Although it is only the Commissioners who are empowered (5 & 6 Vict. c. 35, sec. 120) to demand the production of all particulars required by them for the purposes of the Income Tax Acts, and this only for the purposes of appeal, it is usual and useful to prepare and place accounts for Income Tax purposes before the Surveyors, and in such preparation to bear in mind the principles on which the tax is assessed, and we

have, therefore, thought it convenient to reproduce here the exact words of the more important provisions.

The chief Acts are 5 & 6 Vict. c. 35 ; 16 & 17 Vict. c. 34, 37 & 33 Vict. c. 67 ; and 43 & 44 Vict. c. 19, but from 1842 (the date of the main Act) to 1910, no less than fifty-seven other statutes have added complexities to an intricate subject, further, complicated with case law and judicial decisions of a seemingly contradictory character. By 5 & 6 Vict. c. 35 (1842) the several properties, profits, and gains, in respect of which duties are to be assessed, are classified under five schedules, known as A, B, C, D, and E. Schedule A (Landlord's or Property Tax) prescribes the rules as to the statutory assessment of income arising from the ownership of or interest in lands, tenements, and hereditaments. The assessment may or may not be equivalent to the rent actually received. It is levied on the occupier, but is by him recoverable from the landlord. An owner may occupy his own premises and pay no rent at all, but he is liable to a statutory assessment. Schedule B prescribes the rules as to the assessment of income in respect of occupation of land for purposes of cultivation, or of house property if occupied as part of a farm. The basis of assessment is one-third of the gross annual value of the property under Schedule A. Schedule C deals with incomes arising from annuities and dividends payable out of public revenues. The tax in this case is collected at the source on the actual income, but this does not necessarily apply where the amount is less than fifty shillings, or where such dividends are not payable upon coupons annexed to Stock Certificates payable to bearer. Schedule D we describe in greater detail after Schedule E, which deals with incomes derived from all public offices and employments of profit.

The schedule, with which we are here chiefly concerned, is Schedule D, under which duties shall be charged for and in respect of the annual profits or gains arising or accruing to any person residing in the United Kingdom, from any kind of property whatever, whether situate in the United Kingdom or elsewhere, or from any profession, trade, employment, or vocation, whether the same shall be respectively carried on in the United Kingdom or elsewhere. And for and in respect of the annual profits or gains arising or accruing to any person whatever, whether a subject of his Majesty or not, although not resident within the United Kingdom, from any property whatever in the United Kingdom, or any profession, trade, employment, or vocation exercised within the

United Kingdom, and to be charged for every twenty shillings of the annual amount of such profits and gains. In ascertaining the profits of any person chargeable under Schedule D, it shall be lawful to estimate the value of all doubtful debts due or owing to such person; and in the case of the bankruptcy or insolvency of the debtor, the amount of the dividend which may reasonably be expected to be received on any such debt, shall be deemed to be the value thereof, and the duty chargeable under the said schedule shall be assessed and charged upon the estimated value of all such doubtful debts accordingly (16 & 17 Vict. c. 34, sec. 50).

The Rules under which the said duties shall be assessed and charged, are contained in the Act of 5 & 6 Vict. c. 35, and so far as they concern profits of manufacture, are:—

Full Profits on average of last Three Years.

- (a.) The duty to be charged shall be computed on a sum not less than the full amount of the balance and profits or gains of any trade, manufacture, adventure, or concern upon a fair and just average of three years, ending on such day of the year immediately preceding the year of assessment on which the accounts of the said trade, etc., shall have been usually made up, or on the fifth day of April preceding the year of assessment, and shall be assessed, charged, and paid without other deduction than is hereinafter mentioned as allowed: Provided always, that in cases where the trade, etc., shall have been set up and commenced within the said period of three years, the computation shall be made for one year on the average of the balance of the profits and gains from the period of first setting up the same: Provided also, that in cases where the trade, etc., shall have been set up and commenced within the year of assessment, the computation shall be made according to the best knowledge and belief of the person to be assessed (5 & 6 Vict. c. 35, sec. 100).

On all Persons, Companies, and Occupations.

- (b.) The said duty shall extend to every person, body politic or corporate, fraternity, fellowship, company, or society, and to every art, mystery, adventure, or concern carried on by them respectively, in Great Britain or elsewhere,

Deductions allowed from Gross Profits.

- (c.) In estimating the balance of profits and gains chargeable under Schedule D, or for the purpose of assessing the duty thereon, no sum shall be set against or deducted from, or allowed to be set against, or deducted from, such profits or gains on account of (1) any sum expended for repairs of premises occupied for the purpose of such trade, etc., nor for any sum expended for the supply or repairs or alterations of any implements, utensils, or articles employed for the purpose of such trade, etc., beyond the sum usually expended for such purposes, according to an average of three years preceding the year in which such assessment shall be made; (2) nor on account of loss not connected with or arising out of such trade, etc.; (3) nor on account of any capital withdrawn therefrom; (4) nor for any sum employed or intended to be employed as capital in such trade, etc.; (5) nor for any capital employed in improvement of premises occupied for the purposes of such trade, etc.; (6) nor on account or under pretence of any interest which might have been made on such sums if laid out at interest; (7) nor for any debts, except bad debts proved to be such to the satisfaction of the Commissioners respectively; (8) nor for any average loss beyond the actual amount of loss after adjustment; (9) nor for any sum recoverable under an insurance or contract of indemnity; (10) nor for any disbursements or expenses of maintenance of the parties, their families or establishments; (11) nor for the rent or value of any dwelling house or domestic offices, or any part of such dwelling house or domestic offices except such part thereof as may be used for the purpose of such trade or concern, not exceeding the proportion of the said rent or value hereinafter mentioned (two-thirds); (12) nor for any sum expended in any other domestic or private purposes distinct from the purposes of such trade. If the premises in which the business is carried on are owned by the occupier, he is entitled to deduct from the profits, the full annual value of the trade premises as assessed under Schedule A.

Interest and Royalties on Patents to be included.

- (4.) No deduction shall be made on account of any annual interest, or any annuity or other annual payment, payable out of such profits or gains, and (by sec. 25, subsec. 1, Finance Act, 1907) no deduction shall be made on account of any royalty or other sum paid in respect of the user of a patent.

None but Trade Deductions allowed.

- (1.) No sum shall be set against or deducted from, or allowed to be set against or deducted from, such profits or gains for any disbursements or expenses whatever, not being money wholly and exclusively laid out or expended for the purposes of such trade, etc.

It follows from these stringent provisions that the common practice of deducting from the gross profits of a concern, an equivalent for the current interest on the capital employed, or an allowance for the remuneration of the working partners, or any annual payment to the representatives of deceased partners, or the amount paid for Income Tax, is totally inadmissible for the purpose of Income Tax assessment. Questions will also often arise as to improvements made out of profits, enlargement of premises, purchase of improved machinery, or extra advertising for future advantage. Expenditure under these heads will be liable to be considered as capital outlay, not allowed to be deducted, especially if it is entered and shown separately from the ordinary current outgoings of the business. The Board of Inland Revenue has since 1897, however, if a claim is made in respect of the introduction of modern machinery into a factory, allowed a deduction from the assessable profits of the year, of so much of the cost of replacement as is represented by the existing value of the machinery replaced. The Board in its memorandum or instruction on this point adds, "Any excess in the cost of the new machinery over the actual present value of the old, is an addition to the capital of the business, and cannot properly be regarded as a charge upon revenue for the purposes of Income Tax assessment." The allowance originated from a letter dated May 28, 1897, from the then Chancellor of the Exchequer to the Secretary of the Association of Chambers of Commerce. This letter is generally known as the "Leicester" letter, as the

instruction was first given to the surveyor at that place, and is referred to by that name. The action thus taken has not yet been legalised by statute, doubtless owing to the fact, that thereby the whole question of taxation of wasting assets, involving the important subjects referred to in the chapter on Fixed Capital, would be raised. Questions may, and do arise, however, when replacements are charged to revenue and allowed for in the assessment, as to any allowance being made for wear and tear on such plant and machinery.

Depreciation.

An improvement in the management of the tax as to deductions for depreciation of plant and machinery, was introduced in 1878. The provision is as follows :—

That the Commissioners shall, in assessing the profits or gains of any trade, etc., chargeable under Schedule D, or the profits of any concern chargeable by reference to the rules of that schedule, allow such deduction as they may think just and reasonable, as representing the diminished value, by reason of wear and tear during the year, of any machinery or plant used for the purposes of the concern and belonging to the person or company by whom the concern is carried on ; and for the purpose of this provision, where machinery or plant is let to the person or company by whom the concern is carried on upon such terms that the person or company is bound to maintain the machinery or plant and deliver over the same in good condition at the end of the term of the lease, such machinery or plant shall be deemed to belong to such person or company. Where any machinery or plant is let upon such terms that the burden of maintaining and restoring the same falls upon the lessor he shall be entitled, on claim made to the Commissioners, to have repaid to him such a portion of the sum which may have been assessed and charged in respect of the machinery or plant, and deducted by the lessee on payment of the rent, as shall represent the Income Tax upon such an amount as the Commissioners may think just and reasonable as representing the diminished value by reason of wear and tear of such machinery or plant during the year : Provided that no such claim shall be allowed unless it shall be made within twelve calendar months after the expiration of the year of assessment (41 Vict. c. 15, sec. 12). The allowance made since 1897 on account of the supersession of machinery, has already been referred to. The importance of the alteration in method is shown

by the fact that whereas the allowance for depreciation of machinery and plant was in 1879 only £500,000, it was in 1899 £8,500,000, and in the financial year 1906-7 £17,300,000, having increased 50 per cent. since 1001-2.

The Report of the Inland Revenue Commissioners for 1908-9 shows the sums allowed for wear and tear compared with the total assessments under Schedule D as follows.

NET SCHEDULE D.

Year.	Income.	Allowance for wear and tear.
	£	£
1898-9	318,555,003	7,094,184
1903-4	364,383,933	12,789,498
1907-8	394,498,345	19,331,953

In this connection it may be pointed out that in recent years the Commissioners have allowed increased rates of "wear and tear" in respect of extended hours of working, such as double shifts.

When a higher rate of depreciation is written off in the books than is allowed for Income Tax purposes, the diminishing value, shown in previous Income Tax returns, should be taken as the basis of the amount claimed for depreciation, as otherwise the rate will be on the smaller value, and the difference between the two be ineffective for reducing the Income Tax claim.

The costs of leases, or an annual sum set on one side for their depreciation or amortisation, are not recognised as allowable deductions, nor is anything allowed for depreciations of buildings or for the diminishing value of mineral properties by reason of the extraction of the minerals.

The deduction for depreciation has to be dealt with separately from other deductions, and after the statutory or average income for the three years has been arrived at. Section 26 (3) of the Finance Act of 1907 provides that if in any year owing to there being no profits or gains chargeable, or such profits and gains are less than the deduction, full effect cannot be given to the deduction, such deduction, or such portion thereof as effect cannot be given to, shall, for the purpose of making the assessment for the following year, be added to the amount of the deduction for the wear and tear for that year, and deemed to be part of that

deduction, or if there is no deduction for that year, be deemed to be the deduction for that year, and so on for succeeding years. In respect of carrying forward these balances from time to time over a series of years, allowances for depreciation are more liberally dealt with than ordinary losses incurred in successive years, as may be seen by taking a hypothetical case with losses in each of six successive years. It is however provided by Section 26 (2) of the Act of 1907 that no deduction shall be allowed in any year, if that deduction with previous deductions makes the aggregate deduction in excess of the actual cost, including therein renewal, improvement, or reinstatement.

In 1909, as a result of negotiations between various municipal associations and the Board of Inland Revenue, the latter approved a scheme for determining the allowances to be granted for wear and tear in respect of tramways and light railways, gas, water and electricity undertakings. For these industries, uniform scales of depreciation will apparently be in force, and to the extent of this uniformity, apart from the question of the sufficiency or otherwise of the allowances, these undertakings will have an advantage over others to which no uniform scale is applied, and whose owners are individually at the mercy of the authorities.

The arrangement cannot advantageously be set out in detail in this appendix, but as indicative of its general tenor, it may be mentioned that the life of the permanent way is based on the average mileage per mile of track per annum, and that no allowance is made in computing the assessable profits in respect of any expenditure on repairs or maintenance of the permanent way, but the allowance for depreciation is to be computed at such sum per annum as will in the aggregate over the determined life of the permanent way, be equal to the cost of renewal, plus the estimated repairs for the period. The amount for repairs is to be the actual average expenditure for the three years preceding, or such less period as the undertaking has been in existence.

The scheme also fixes the rates of depreciation to be allowed off the written down values of various classes of plant and apparatus in electric light undertakings.

"Written down values" are defined as meaning "original prime cost plus subsequent additions less all allowances actually granted by the Revenue in respect of wear and tear."

As regards gas and water undertakings, the scheme provides that no depreciation shall be allowed in any circumstances in respect of any portion of these undertakings, but that all

expenditure on repairs and renewals, but excluding extensions and improvements, are to be charged and allowed as working expenses, as and when incurred.

The scheme however reserves to these undertakings the benefit of clause 3, Section 26 of the Finance Act of 1907, already referred to.

We have already drawn attention (Chapter VI.) to the need of correctly ascertaining the amount to be charged for depreciation. The Commissioners who make the assessment, now make the depreciation allowance; but in practice some difficulty may be experienced in inducing them or their surveyors to permit a sufficient deduction under this head, in addition to allowing for repairs actually effected. They rightly attach much weight to the allowance which the proprietors of the concern actually make as among themselves, and it is obvious that careful attention to correct book-keeping on this point, before the question is raised, will greatly facilitate a settlement. On this ground alone, the accounts should show clearly what is the amount written off for depreciation, not only in the aggregate but in detail, and the cost of repairs and replacements should be kept separately. The manner in which this may be done is fully described in the chapters on "Fixed Capital" and "Machinery Use." If the principle of charging for the use of machinery on a time basis is adopted, the similarity in many cases of machine and manual labour will be more manifest, and eventually this may become recognised for Income Tax purposes.

Return of Income Tax.

Under the 133rd section of the Act of 1842, and the 6th section of the Act of 1865, it was provided that if within or at the end of the year current at the time of making any assessment, or at the end of any year when such assessment ought to have been made, any person charged to the duties contained in Schedule D, whether he shall have computed his profits or gains on the amount thereof in the preceding or current year, or on an average of years, shall find, and shall prove to the satisfaction of the Commissioners by whom the assessment was made, that his profits or gains during such year for which the computation was made fell short of the sum so computed in respect of the same source of profit on which the computation was made, it shall be lawful for the said Commissioners to cause the assessment made for such

current year to be amended in respect of such source of profit as the case shall require (5 & 6 Vict. c. 75, sec. 133); no such reduction, however, shall be made unless the profits of the said year of assessment are proved to be less than the profits for one year on the average of the last three years, including the said year of assessment; nor shall any such relief extend to any greater amount than the difference between the sum on which the assessment has been made and such average profits for one year as aforesaid (28 Vict. c. 30, sec. 6).

These provisions were however in effect repealed by the Finance Act of 1907, but by section 24, sub-section 3 of that Act, the benefits of these clauses are preserved in the case of cessation of business, by the enactment that where a profession, trade, or vocation is discontinued in any year, any person charged, or chargeable, with income tax in respect of that profession, trade or vocation, shall be entitled to be charged on the actual amount of the profits or gains arising from the profession, trade, or vocation in that year, and shall also, if he proves to the satisfaction of the Commissioners, by whom the assessment has been or could have been made that the total amount of the income tax paid during the previous three years, in respect of that profession, trade, or vocation, exceeds the total amount which would have been paid if he had been assessed in each of these years on the actual amount of the profits or gains arising in respect of the profession, trade or vocation, be entitled to repayment of the excess.

By sub-section 2 of the same section (24) it is provided that where professions, trades, or vocations are set up or commenced within three years, and the taxpayer proves at the end of the year of assessment to the satisfaction of the Commissioners that the actual profits in the year of assessment fall short of the profits as computed according to the rules of the Income Tax Acts, he shall be entitled to be charged on the actual amount of the profits so arising, instead of on the amount of the profits so computed, and, if he has already paid the full amount of the tax he shall be entitled to claim repayment of the amount overpaid.

In the second year the assessment will be on the actual profits of the first year, and if the actual profits fall short, the return of tax can be claimed on the difference.

In the third year the assessment will be based on the average profit for the two first years, and a return of tax can be obtained if the actual profits of the third year are less than the computed profits based on the average profits of the first two years.

Section 23 of the Customs and Inland Revenue Act, 1890, provides for the adjustment of a person's liability when he has sustained a loss in his trade or profession during the year of assessment and subject to certain specified conditions for the repayment of duty overcharged. The repayment of tax overpaid in consequence of an excessive return made through an error, but not discovered until the legal time for appealing has expired, is not recoverable by law, however large may be the consequent loss.

Exceptions to the Three Years' Average.

The owners of quarries, ironworks, gasworks, salt springs or works, alum mines or works, water works, streams of water, canals, inland navigation, docks, drains and levels, fishings, rights of markets and fairs, tolls, bridges, ferries, and other concerns of a like nature are assessed on their annual value or profit.

Mines are chargeable on the average of the five preceding years.

As regards liquidation and alterations in partnerships, it is provided :—

In case any person charged under Schedule D shall cease to exercise the profession, or to carry on the trade, on the profits of which he is assessed, or shall die or become bankrupt, or shall from any other specific cause be deprived of, or lose, the profits or gains on which the computation of duty was made, it shall be lawful for such person, or his executors or administrators, to make application within three calendar months after the end of each year to the Commissioners, and the Commissioners shall cause the assessment to be amended and give relief. Provided that where any person shall have succeeded to the trade or business, no such abatement shall be made, unless it shall be proved that the profits and gains of such trade have fallen short for some specific cause since such change or succession took place, or by reason thereof, but such person succeeding to the same shall be liable to the payment of the full duties thereon without any new assessment (5 & 6 Vict. c. 35, sec. 134.)

APPENDIX C

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THE RATING OF FACTORIES CONTAINING MACHINERY.

As, for a long time, questions have arisen as to how far machinery and plant is to be taken into consideration in estimating the rateable value of the premises in which the business is carried on, it may be useful to give a brief outline of the present position of this subject.

The assessments originate with Overseers of the Poor, and assessment committees, and in practice the greatest diversity prevails in computing them. When there are a few

The assessing authorities. small factories in a district the value of the machinery is often ignored in framing the assessment, which is in such cases based on the estimated or actual net rental value, as with a shop or dwelling-house. In districts in which industry is localised the assessing authorities often take the capacity of production as the guide to the assessment, and base their

Varying modes of assessment. computations on the spindle, horse-power, or other common factor in the trade,* whilst in many instances the assessors have adopted rules originally intended for very different kinds of property, or formulated entirely new

* Such an assessment does not take cognisance of the wear and tear of machinery and its tendency to obsolescence, and thus bears unduly and unfairly against those factories which have been longer established than their rivals, and are already burdened with older type machinery. In a pamphlet on the "Incidence of Local Taxation," Mr. Hedley states that, in 1883 the Hunstret Union Assessment Committee decided to disregard the law laid down by the High Court (in the Bishopswearmouth case) and resolved to exclude

modes of valuation. This want of uniformity as between district and district, handicaps certain trades in the one as compared with similar trades in the other district, whilst inequality or uncertainty of allotment is unfair as between individuals trading in the same district, for "it must always be remembered that the real end and object for the assessment of property is not to determine as a mere speculative question the rent at which it might let from year to year, but to bring the particular property down to a common basis, so that the burden of the poor-rates may be equally borne by the occupiers within the parish. This being so, it does not seem unreasonable, when any difficulty arises in ascertaining how a particular property or class of property is assessed, that reference should be made to the rules that prevail in the valuation of ordinary classes of property in the parish. Special properties may require special rules, but where there is no such necessity the occupier of property has a right to have applied to his occupation the principles which determine the rateability of other property.' *

Assessment should be on common basis.

That machinery *per se* is not rateable is generally admitted; indeed, any other conclusion would be inconsistent with the Act of 1840 by which personal property was declared not to be rateable. The question is as to how far in factories or works, the machinery is to be taken into account, as enhancing the rateable value of the hereditaments. The law on this point, if law there can be said to be, is to be found in the judge's decisions in cases of appeals against assessments, and these decisions have so widely differed that the author of the legal text-book already referred to admits that it is impossible to reconcile them, whilst many factory occupiers believe that certainty and equality in assessment are only to be obtained by legislative definition of what machinery is to be considered in the assessment.

Legal decisions.

machinery from the assessment of the works, and to rate all engines at a uniform rate of £4 per horse-power. And he adds, "To rate all engines on a uniform rate of £4 per horse-power, irrespective of whether they are common engines with egg-end boilers and a few feet of shafting, or high-class engines with tubular boilers, super heaters, and many yards of shafting, is clearly as unfair and unequal as it would be to rate all agricultural lands in the Union at a uniform rate of £2 per acre, irrespective of whether the land is worth £1 or £5 per acre."

* "A Practical Treatise on the Law of Rating," by E. J. Castle, K.C. London: Stevens.

The cases referred to extend over the last hundred years,* but only four of these need now be taken as landmarks of the subject.

The Phoenix Gas Company case. In 1866 the assessment of the Phoenix Gas Company was appealed against, but it was held that the steam-

engines, boilers, gasholders, retorts, and purifiers at the works and the mains in the public streets added to the permanent value of the freehold, and as such were rightly considered

in the assessment. In the following year, however, in

The Halstead silk factory case. the case of a silk factory at Halstead it was held that

looms and other machines merely screwed to the floor came under the category of movable fixtures, and were not to be considered in the assessment.* In 1877-8, however, the

late Lord Chief Justice Cockburn, in the case of "Laing and the

The Laing case. Overseers of Bishopswearmouth," expressed some doubt as to the decision in the Halstead case, and with

reference to the case then before the Court, said: "This strikes me as being a case the principle involved in which is of very considerable importance, in which I should hope there would be a final and binding authority upon the subject, and in which we may have to consider the effect of these cases (the cases quoted in the argument), which perhaps may prove to be somewhat in conflict with one another." In this instance it was held

An important decision. that the lathes and machines, for planing, drilling, punching, and riveting were properly included in the assessment, as such machinery, though some of it might be capable of being removed without injury to itself or the freehold, was "essentially necessary to the shipbuilding business to which the appellants' premises are devoted, and must be taken to be intended to remain permanently attached to them so long as these premises are applied to that present purpose."

In 1886 the Court of Appeal gave a decision which confirms and

* Trade fixtures generally (using the term as inclusive of both removable and permanent fixtures) are said to be both theoretically and legally rateable, but the practice of exempting removable fixtures has become almost universal. "The law is that they are part of the premises, and pass under a mortgage, and a tenant is allowed to remove them during his term, not in the same way as he may his carpets, but only because the Courts were induced to relax the strictness of the old rules of law in order that the commercial interests of the country might be enhanced by the encouragement given to tenants to employ their capital in making improvements for carrying on trade, from the certainty of having the benefit of the expenditure secured to them to the end of their term."—"A Practical Treatise on the Law of Rating." E. J. Castle, K.C. London: Stevens.

extends that given in the case of *Laing v. the Overseers of Bishopsweafmouth*. This decision has been given in a case stated for the

The most recent decision:

The Tyne Boiler Works case.

opinion of the Court by the Northumberland Quarter Sessions, who held that the Tyne Boiler Works Company had been rightly assessed to the relief of the poor, the rateable value of their premises being arrived at by ascertaining the gross estimated rental which a tenant from year to year might reasonably be expected to be willing to give for the use of them (inclusive of the machinery and plant), and by making the statutory deductions from such rental. The premises were occupied under a lease from the Corporation of Newcastle-upon-Tyne, and they were described as being rendered suitable for boiler-making by their proximity to the Tyne and as containing machinery for boiler-making, part of such machinery being affixed to the soil, but part, such as a hydraulic riveting machine, two hand-power travelling cranes, and shear legs with engine and boiler, was not attached either to the soil or the building but rested by their own weight. There was a boiler set on a brick seating outside the main building, and the main engine was fixed by iron screw bolts to masonry foundations, in which a well was constructed for the fly-wheel, and other machinery was affixed by bolts or brackets to the walls, or to a foundation of stone or cement. As to the machinery that was not affixed to the soil or building, the hydraulic riveting machine rested upon cement or stone foundations, the travelling cranes ran along the whole length of the main building on rails laid on balks of timber resting upon brackets, and the shear legs were placed on the edge of a timber jetty on the river. The main shafting ran along the entire length of the main building, and all the machines were worked by belts from the main shafting. All the machines and plant belonged to the Company, and were arranged and adapted for use upon the premises for the manufacturing and setting up of boilers, but there was no intention of permanently annexing them to the soil or premises. Each of the machines was separate, and was from time to time removed for repairs or otherwise without injury to themselves or structural damage to the premises, the object of the attachment described being to steady the machines when working.

The Divisional Court having confirmed the order of the Northumberland Quarter Sessions, the Company appealed, with the result that the judgment of the Queen's Bench Division was affirmed. The Master of the Rolls, in giving judgment, reviewed

the various prior decisions on the subject, and stated that the rule might be laid down thus :—Things which were on the premises to be rated, which were there for the purpose of making and which made the premises fit as premises for the particular purpose for which they were used, ought to be taken into consideration as enhancing the rateable value of those premises. Anything that would come under this category would pass by demise as between landlord and tenant, and would as such be rightly considered in the assessment.*

In 1889 the Chard (Somersetshire) Assessment Committee in assessing lace factories took into consideration the lace-making machinery on the premises. The assessment was appealed against, and the amount thereof was considerably reduced at the Somersetshire Quarter Sessions : the Assessment Committee was ordered to pay the costs. Against the reduced assessment appeals were carried to the Queen's Bench Division and the Court of Appeal, and in these appeals the original question as to the rating of machinery *per se* appears to have become ignored, for the Chard Assessment Committee, after a decision in their favour in the Court of Appeal, suggested a compromise by which, each party paying their own costs, the sum in dispute should be equally divided. The manufacturers accepted the compromise offered, as they were advised that the reduced assessment would represent the rateable value.

In similar circumstances the Gloucester and Sunderland Assessment Committees have, without there being an appeal to the Queen's Bench Division or Court of Appeal, acted on the lines of compromise carried out by the Chard Committee.

The case of *Crockett and Jones v. the Northampton Union*, which was before the High Court in 1902, referred to very small

* The case is thus noted in the *Law Times* of December 4, 1886 :—"Poor Rate—Rating of Premises used for a particular purpose—Chattels on the Premises—Boiler Works—Machinery and Plant. In assessing premises to the poor rate, the question whether chattels on the premises are affixed to the soil or not is not an absolute test in determining whether or not they are to be taken into account as enhancing the value of the premises. But things which are on the premises to be rated, and which are there for the purpose of making them, and which do make them, fit as premises for the purpose for which they are used, ought to be taken into account for rating purposes. Therefore the machinery and plant of a boiler works which (whether affixed to the soil or not) is essentially necessary to the carrying on of the business to which the premises are devoted, and which is intended to remain upon the premises so long as they are used for the same purpose, ought to be taken into account as enhancing the value of the premises."

machines used in the manufacture of boots and shoes. The premises in question consisted of a boot manufactory fitted with two classes of machinery, the first class, consisting of gas engine, boilers, shafting, etc., and which were admittedly part of the freehold and which both sides agreed were to be taken into consideration in arriving at an assessment of the premises; the second class is what is usually known as Tenants' Machinery, consisting chiefly of small sewing and cutting machines necessary for the manufacture of boots and shoes, none of the machinery being so fixed as to be part of the freehold. Some of the machines did not need to be bolted to the flooring, but were steadied by putting the footplates under wedges. They were driven by power from overhead shafting and pulleys. This latter class the Union Authorities had included in their assessment of the premises, whilst the appellants contended that such machines were "chattels." The High Court held that the Assessment Committee were right in taking the second class machinery into consideration in fixing the assessment, and that the rateable value was to be based upon the suitability of the premises to receive the second class machinery, and on the fact that such machinery was on the premises.

Throughout the judgments in the *Bishopswearmouth, Tyne and Northampton* cases, there seems to run an assumption that a hypothetical tenant might give a higher rent for premises by reason of his having the opportunity of taking the machinery contained therein. This is probably true as regards motive power and the machinery common to most trades, which is generally attached permanently to the premises, and these, on account of being so furnished, let at higher rentals. But specially designed machinery can only increase the probable rental, and therefore the assessment, if the premises are let to an incoming tenant carrying on the same trade as the outgoing tenant and by means of similar mechanical appliances, and in that case part of the increased rental would be due to the opportunity of entering furnished premises, and part to the opportunity of acquiring by purchase from the outgoing tenant some of the machinery which he might otherwise remove.*

The decisions referred to will probably so intensify the confusion

* "Trade fixtures attached to the soil are to be taken as landlord's property, subject only to the special privilege granted to the tenant who has put them up of removing them during his tenure."—"A Practical Treatise on the Law of Rating," by E. J. Castle, K.C.

in the minds of the various rating authorities with regard to what is and what is not to be considered as assessable, as to lead to useful controversy with regard to what should and what should not be assessable, and eventually to legislative enactment on the subject.

In view of these varying decisions or interpretations of the law, and the uncertainty and want of uniformity in assessments, a Bill to amend the law relating to the Rating of Machinery, was introduced into the House of Commons in 1885, but was not proceeded with until 1893, when, owing to the exertions of the National Society for the Exemption of Machinery from Rating, a somewhat similar Bill was introduced into Parliament to amend the law. This Bill and similar Bills have been carried on second reading in the House of Commons in the various sessions in which they have been introduced. The Royal Commission on Taxation considered the subject and reported in 1901. The Commissioners favoured an alteration of the law in the sense proposed by the Bill, stating, "We therefore recommend that in estimating the rateable value of any hereditament occupied for trade, business, or manufacturing purposes, there shall be excluded from the assessment any increased value arising from machines, tools, or appliances which are not fixed, or are only so fixed that they can be removed from their places without necessitating the removal of any part of the hereditament, but the value of any machinery or plant used on the hereditament for producing or transmitting first motive power, or for heating or lighting a hereditament should be included."

On December 18, 1905, the House of Lords gave judgment in the appeal case of Kirby, and the Assessment Committee of Hunslet Union and others, and dismissed the ratepayers appeal on the ground, mainly it would seem, that the lower Courts had for fifty years passed successive judgments to the same effect. This was the first time the question had been raised in the House of Lords. In effect it was in this case held by the final Court, that in assessing the value of premises used as engineering works, the value of user of the machinery, which is on the premises for the purpose of making the premises fit, as such, for engineering works, must be taken into account as enhancing the value of the premises, even if such machinery is not fixed to the freehold by physical attachment so as to form part thereof.

The work of educating public and parliamentary opinion on this matter has been ably taken up by the Machinery Users

Association who, in the session of 1906, introduced a Bill applicable to England and Wales by which it was provided "from and after the passing of this Act in estimating for the purpose of any valuation list, or poor or other local rate, the gross estimated rental or rateable value of any hereditament occupied for any trade, business, or manufacturing purposes, any increased value arising from machines, tools, or appliances which are not fixed or are only so fixed that they can be removed from their place without necessitating the removal of any part of the said hereditament shall be excluded.

"Provided that the gross estimated rental of any such hereditament shall be estimated at not less than the sum at which it might reasonably be expected to let for the purpose for which it is used on a tenancy from year to year void of the machines, tools, and appliances which it might reasonably be expected would be supplied by the tenant, if the tenant paid all the usual tenants' rates and taxes and if the landlord undertook to bear the cost of the repairs and insurance and the other expenses (if any) necessary to maintain the said hereditament in a state to command such rent.

"Provided also that the terms machines, tools, and appliances for the purposes of this Act shall not apply to any machinery, machine, or plant used in or on the hereditament for producing or transmitting first motive power, or for heating or lighting the said hereditament."

On the promise of the Government to introduce a Valuation Bill of their own the Bill of the Machinery Users Association has not been re-introduced.

Pending settlement of the question it may be serviceable to enumerate some of the points to be considered before agreeing to or dissenting from assessments.

The basis of assessment on factories rented from year to year is naturally the actual net rental value. Questions only arise where the occupier's interest is that of a freeholder or a lessee for a term of years, and where machinery has been erected by the occupier *quâ* occupier. In either case the basis of assessment would be the gross estimated rental which in a particular district, under ordinary circumstances, a tenant from year to year might reasonably be expected to give for the use of the premises inclusive of the machinery and plant, with the deduction on account of maintenance, repairs, fire insurance, and any charges which in a term of years would have to

Checks on assessments.

be met before profit could be reckoned.* In the case of factories occupied by the owner it should be remembered that the assessment is made on him as an occupier, and that he should discriminate between his dual interests. Whilst calculations on the basis of the capital sunk in the building and on his plant, and the interest thereon, are aids in checking the estimated rental that would be receivable, they cannot be considered as final, or as yielding a basis of assessment, owing to numerous accidental circumstances, such as the increase or decrease in the value of ground rents, and of variation of cost in the construction of new, or structural alteration in, old factories.

The same basis of assessment is often applied to the rating of workshops, using that term as distinctive of places where production is not made for profit, but where production or repairs are effected for the sole use and benefit of the occupiers. In this category fall the shops of railway, gas, tram, water, and similar undertakings, as also national and municipal workshops.

The basis of assessment on work-shops. Aid in checking that portion of the assessment which may be said to be on account of machinery, is derivable from a Machinery Ledger, if such be kept (see Chapter VII.). The value of the machinery that would pass with the freehold would be ascertainable from it.

The statute law in Scotland as regards the rating of machinery differs from that of England. In the former country, the main statute is the Lands Valuation Act of 1854, which under the term "lands and heritages" includes "all machinery fixed or attached to any lands or heritages" as liable to assessment. In the case of the North British Railway Co. (1887, 25 Sc. L. Rep. 4), Lord Fraser held that machinery that could be "detached without destruction to itself or injury and destruction to the building," was not attached and was not assessable.

In 1894, Lord Wellwood held, in the case of Cowan and Sons, Limited, that such machinery was assessable provided it could be shown to have been attached to the premises in order to be permanently or quasi-permanently used in that position, and that the buildings had been altered and specially adapted to the use of the machinery, and would require to be reconstructed or altered if the machinery were removed, unless replaced by machinery of

* This deduction should, in our opinion, include a provision for obsolescence. All machinery is of a changeable nature, and provision has constantly to be made for its going out of fashion.

precisely the same size or shape. This view was upheld by the Lands Valuation Appeal Court in March, 1902, when, in the case of James Carmichael and Co., Limited, it was held that machines in an engineering foundry attached by bolts to specially prepared foundations were assessable.

The practice by which surveyors arrive at the deduction to be made from the gross to produce the rateable value, varies in different districts and with different surveyors. It is of considerable importance to the occupiers of factories, however, to see that they are obtaining the full abatement to which they are entitled.

In London, by the Statute of 1869, the maximum deduction is one-third, and thus, in cases where the gross value of the machinery is small relatively to the value of the lands and buildings, may lead, where varying rates of deduction are allowed on land, buildings, and machinery respectively, to the anomaly of a property containing machinery being assessed at a lower rateable value than a similar property not containing machinery.

The London Assessment Conference of 1904, conscious of the anomaly this produced, adopted the suggestion made by Mr. Harper, the statistical officer of the London County Council, that as a working rule the difference between the gross and rateable value should be computed as follows:—

1. Arrive at the gross value of the lands and buildings in the usual way, and deduct therefrom the usual proportion to arrive at the rateable value.
2. Arrive at the gross value of the machinery by taking a percentage of ten per cent. on the capital value, and deduct therefrom a portion of two-fifths to arrive at the rateable value.
3. The total of these two deductions will represent a fair amount to be deducted from the gross value to arrive at the rateable value of the hereditaments as a whole.

APPENDIX D.

SOME NOTES ON THE LAW RELATING TO FIRE INSURANCE.*

THE PROPOSAL AND THE POLICY.

It is of the greatest importance that the form of proposal should be correctly filled in, and the questions answered, in an accurate and straightforward manner, without equivocation or ambiguity; as a misrepresentation or a concealment of a material fact, whether intentional or not, may invalidate a policy. The fact that the property proposed to be insured has been inspected by a representative of the insurance office does not relieve the assured from the responsibility of bringing under the notice of the office any circumstances which affect the degree of the risk. Good faith is always assumed to be the basis of insurance.

The representations contained in the proposal must be *substantially* true; all specific conditions and warranties in the policy must be complied with absolutely; and this applies to descriptions of the property insured, if expressly contained or referred to in the policy.

Immediately the policy of insurance is received by the insured, he should carefully examine it, and if the property is not correctly described or the policy contains any other error, it should, without loss of time, be returned to the office for correction. If the required alteration is not inconsistent with the conditions of the policy it can be made by

* The object of these notes is to indicate to factory occupiers the liabilities which, from an accountant's point of view, it is desirable to provide for by insurance or otherwise. In its legal aspects the subject of insurance against losses by fire has been dealt with in "The Law of Fire Insurance," by Charles John Bunyon, M.A. (London: C. and E. Layton), to whom we are largely indebted for the subject matter of these notes.

endorsement, but if this alteration is intended to vary the contract, a new policy should be applied for.

In view of the fact, that, in the case of large insurances the risk is generally divided between several offices, and that consequently several policies are issued to the insured, it is recognised as a great convenience that the leading offices now practically adopt a common form of policy.

Common form of policy.

The liability of the insurers continues for the term specified in the policy, but when the policy is renewable, the assured is allowed fifteen days' grace, and if a fire occur during this interval he will, by practice, be fully protected: but in that event he should immediately pay the premium and thereby make evident his intention to renew. It is not customary to grant days of grace in the case of policies for short definite periods, and a policy of insurance is not, except by special agreement, determinable before the expiration of the specified term. The offices generally reserve to themselves the right to decline to renew a policy; and if they exercise this right and notify the assured of the fact, or if they give notice that they will not renew the policy except at a higher premium, and the assured declines to agree to this, the policy will expire absolutely on the date specified, the days of grace not being allowed.

Most of the leading offices belong to what is known as the Tariff Association, a combination which has for its object the fixing of minimum rates for certain classes of risks.

Tariff system.

This, no doubt, accounts in a large measure for the existence of co-operation on the part of manufacturers and others for purposes of mutual insurance; and also for the fact that insurances to a considerable amount are effected with non-tariff foreign and colonial fire offices: but it is not at all certain that the public are prejudiced by the operation of the tariff system, which has the effect of encouraging persons engaged in the hazardous trades, to take extra precautions against fire, with the results of diminishing the exceptional losses, and of ultimately bringing the rates of premiums down to the normal level of other trades.

When large insurances have to be effected by a firm, it may be advisable to place the business in the hands of an insurance broker, who may be able to secure much better terms for his client than the latter could obtain by negotiating with the offices direct. It must be remembered, however, that an insurance broker occupies, in a measure, a dual

Position of agent.

position, and that while in some matters he may act for the office, in others he may represent the assured. Even if he is the agent of an insurance company, the latter is not bound to undertake a risk which he has accepted. If the company decline a proposal made through a broker and notify their decision to him, they will not be liable if a fire takes place before he has been able to communicate the refusal to his client. The responsibility of the insurance office cannot be said to commence until they have, by the issue of a receipt, accepted the premium or a deposit; and a broker is personally responsible if having agreed to effect an insurance he neglects to do so and a fire takes place. When the insurance is provisional only, and subject to the office making an inspection of the property, it is usual to grant the office twenty-eight days for this purpose, within which period it has the option to decline the risk; but should a fire occur during the interval, and the office has not declined, it would be liable.

THE NATURE OF THE CONTRACT AND OF THE RISK.

Except in the case of a valued policy, and subject to the special conditions of average (referred to later) a policy of insurance against fire is a contract to indemnify the assured, **Insurance a contract of indemnity.** either by payment or reinstatement, to the extent of his loss or damage by fire not exceeding the amount of the insurance, and this together with the expense of extinguishing the fire, which is usually borne by the insurers, is the extent of their liability. If therefore the assured receives from the office the full value of the property damaged or destroyed, he will have to give the office the benefit of the salvage, and of any rights which

Subrogation. he possesses tending to reduce the loss. If, for instance, the person whose property is destroyed by fire is able to recover the loss from a party other than the insurer, the latter, if he had satisfied the claim, would be able to sue in the name of the assured the person actually responsible for the loss. A person whose property has been negligently set on fire by his neighbour will, if he is insured, be able to recover from either the latter or the fire office. If he recovers under his policy, the office would be entitled to proceed, in the name of the assured, against the person who caused the conflagration. This raises a very serious point for manufacturers and others to consider, for, although their own property may be fully protected, they may by negligently causing the destruction of their neighbour's property,

incor serious loss without protection. "The right of the office rests upon the doctrine of subrogation, by which if a man has two distinct remedies against different parties for one and the same claim, one of such parties paying the whole amount, is entitled to recover it from the other party if primarily liable, in the name of the person originally injured." *

The indemnity is personal to the assured and cannot, "except by way of mortgage," be assigned without the consent of the insurers endorsed upon the policy. It is essential that the **Policy not assignable.** assured should have an interest in the property both when effecting the insurance and at the time of the fire. The conditions of some policies are exceedingly stringent in this respect, and they may be so framed as to render the policy void upon the demise of the assured, or upon the admission of a new partner. Trustees in bankruptcy, or under deeds of assignment, should obtain an endorsement in their favour on the policies when the property becomes vested in them.

When a sale of buildings or of other properties, which are insured, is intended, and it is decided to transfer the insurance, an understanding should be come to with the office. Immediately a contract for sale is concluded, the purchaser **Transfer of properties.** becomes in equity the beneficial owner, and is the sufferer in the event of the property not being insured and a fire taking place. The vendor of the property is not bound to tell the purchaser whether or not the property is insured; and even if there is a policy in favour of the vendor existing at the time of the fire, the purchaser is not, in the absence of a specific agreement, entitled to any benefit under it. But he can call upon the insurers to expend the insurance money in reinstatement. In the case of leaseholds, it should be stated that in the event of the property being destroyed by fire, subsequently to the date of the contract, the purchaser may be bound under the conditions of the lease to rebuild. It is advisable in the interest of the purchaser that these risks should be provided against in the contract for sale, or that immediately it is signed he should insure the property.

When the policy becomes void, or when the interest of the insured in the property ceases from any cause before the expiration of the term of the insurance, the insurers are not **Premiums not returnable.** bound to return the proportionate part of the premium in respect of the unexpired portion of the term though this can usually be arranged if the companies have

"The Law of Fire Insurance."

charged what is called short period rates. Most fire policies, however, provide for the transfer of the insurance upon the removal of the objects insured, and it is usual for the offices to transfer their indemnity from one property to another, provided their risk is not increased; and they will take into consideration the unexpired proportion of the premium in fixing a new rate.

Fire insurances are based either on a valued policy, or are specific, or are subject to the conditions of average. Valued

Valued policies.

policies are those in which the office and the insured agree to assign to the property insured a definite value, which in case of fire shall be the amount to be reimbursed to the insured quite irrespective of the actual loss sustained by him. Such policies are unsatisfactory and very rare; and the onus of proving that the property has been valued rests with the insured. Specific insurances are those in

Specific insurances.

which the insurers are liable for the actual loss, not exceeding the amount for which the property is insured. The third category of fire insurance, embracing the condition of average, calls for most careful consideration by the assured. The effect of this condition of average is to

Condition of average.

make the insured his own underwriter to the extent by which his property is under insured; and in the event of fire he would be able to recover from the offices only such proportion of the loss as the sum insured by them bears to the total value of the property. Thus, if a manufacturer effected an insurance, under the average conditions, upon his stock worth £60,000, and subsequently increased the goods on hand by £20,000 and a fire occurred destroying £40,000 worth of stock, he would be able to recover only £30,000, that being the proportion of the loss which the amount of the insurance (£60,000) bears to the total value of the stock (£80,000) at the time of the fire. The insured, in this case, being in the position of an underwriter for one-fourth of the risk, would be entitled to participate to that extent in the salvage. The average condition is necessarily inoperative if the value of the property does not exceed the amount covered by the policy.

"The subject of alterations after the date of the policy in the structure or use of the buildings, either as regards the trades carried on or the goods deposited in them, has been of all others the most fruitful of disputes between the assurers and the assured. In the decided cases the question has generally turned upon the construction of the

Alterations in the risk.

conditions, and the fire office, tutored by experience, certainly endeavour to guard themselves in every possible manner against unanticipated hazards. In spite, however, of the ingenuity of their advisers, cases must occasionally arise to which no condition is applicable, and the question remains for solution how far an alteration not in terms expressly forbidden affects the contract. The true solution would appear to be found by ascertaining whether by the alteration the description is rendered inapplicable, or whether any express representation as to the future use of the premises has been violated, and whether there is any condition in the policy applicable to the case." *

It is important before making any alteration in or addition to, the property insured, to ascertain whether the description amounts to a warranty, as in that case the policy would be invalidated by a violation of the description; and when the policy expressly disallows any alteration or addition, even a temporary modification would vitiate the policy.

"A question arises when the assured, having effected an insurance upon the stock-in-trade or machinery, undertakes after the date of the policy an additional or different trade or business, not a part of, or incidental to, the first. This is often specially provided for by a condition; when it is not so, two questions may arise. First, whether the alteration has caused any increase of risk; secondly, whether the new stock is covered by the insurance. Assuming that there has been no unauthorised increase of risk to void the policy, if a claim is made for a loss upon property forming part of the new or additional stock, the question must turn upon the wording of the policy, and whether, applying the ordinary rules of construction, it can be fairly inferred that the property destroyed was within the terms of the contract." *

There can be no doubt that a manufacturer whose trade is described in the policy, would not be able to claim indemnification, under that policy, for loss of stock of another trade which he had taken over since the insurance upon his original stock was effected. When the insurance is upon goods of an ordinary character, the addition of goods, which are regarded as hazardous, would invalidate the policy.

It is well that in every case of alteration or addition, the policy should be carefully examined, with the object of ascertaining whether the risk has been increased beyond that contemplated by

the insurers, and whenever there is any doubt the insurance office should be communicated with. It is better in most cases that the owner should pay a higher rate of premium than incur the risk of being his own insurer. The omission to communicate a material fact to the insurers would entitle them to cancel the policy; but they may waive this right by endorsement of the policy, or even by accepting the renewal premium after they have had notice of a violation by the insured of the conditions of the policy. Conversely, should there be a discontinuance of any specially hazardous branch of the business, or should the risk be reduced from any cause during the continuance of the policy, the insurers will generally make some allowance on the ~~renewal~~ premium.

Liability does not attach to the insurers unless the loss is proximately caused by fire. The mere heat of a stove, if it causes damage to property, will not, in the absence of combustion of substances other than the fuel in the stove; **Fire must be proximate cause of damage.** be sufficient to support a claim against the insurers; nor will the insurers "be responsible for any loss on goods or utensils damaged or destroyed whilst undergoing any process in which the application of fire heat is necessary."

With regard to loss by explosion many intricate questions present themselves, and the provisions on this point inserted in policies vary widely; but of course the risk can be indisputably defined by special conditions. **Explosives.**

Ordinary oil and coal gas, for purposes of lighting and heating, are allowed by all policies, but gas must not be made on the premises; and the offices expressly recognise liability **Oil and gas.** for losses caused by gas explosions in premises where gas is not manufactured or stored.

The use of electric light is now generally allowed subject to the installation being in accordance with the rules **Electricity.** laid down by the companies.

The offices are not, it would appear, unwilling to insert in their policies the condition that losses by lightning will be made good, but in the absence of such provision disputes may arise, although the risk of lightning is now generally recognised as being included in an ordinary fire policy.

THE ADJUSTMENT OF THE LOSS.

The insured should, in the event of a fire, give immediate notice to the offices, and prepare to furnish them with such proof of the loss as may be required by the policies. Sometimes it is stipulated that particulars of the damage shall be furnished by a given date, to entitle the insurer to recover, and it is important that this condition should be strictly complied with. Claims made on the insurers are investigated and adjusted by assessors appointed by them.

The nature of the evidence of loss required to be produced with circumstances, in some cases even a statutory declaration being required, but the best proofs obtainable are generally the account books, invoices, etc. If the accounts are properly kept the adjustment of the loss is very materially facilitated.

The account books and business papers are not usually insurable, but their loss, and the consequent inability on the part of the insurer to produce satisfactory evidence of the loss, is frequently regarded, by those who have to assess the damages, as a cause for suspicion.

The claim made upon the insurers should be well founded, and be such as can be evidenced by the books, for although the insured may be justified in making a claim in excess of the amount admitted by the insurers, still a large and unsubstantiated claim may be regarded as an indication of *mala fides*, and it is generally provided in the policy that any attempt on the part of the insured to defraud the insurers shall void the insurance.

The insurers, it appears, have the right to enter the premises where a fire has occurred, and to remain in possession for a reasonable time for the purpose of enabling them to assess the damage; and by the Metropolitan Fire **Right of in-**
surers to en-
ter premises. Brigade Act of 1865, as well as by numerous other Local Acts, power is given to the officers of the brigade to take such measures as they may deem expedient for the protection of life and property, and to break into, or pull down, any premises for the purpose of putting an end to a fire; and any damage that may thereby be caused is covered by the insurance against fire. The insured is bound to do everything in his power at the time of the fire to lessen the loss to the insurers. The costs of extinguishing a fire, as a rule, fall on the insurers, and there are other consequential losses which are generally borne by them, but it is always

advisable that they should be specifically mentioned in the policy. Such are, for instance, the expenses attending the removal of properties, which fall primarily on the salvage; and the loss arising from theft at the time of the fire. But avoidable losses or expenses will not be made good, and goods destroyed by fire during removal are not covered.

The insurance being an indemnity, only the actual loss at the time of the fire will be reimbursed; and the insured cannot claim compensation in excess of his actual loss. If he is insured in several offices he is bound to declare the fact when a fire occurs, and the loss is then distributed rateably among the several offices. The insured is not entitled to compensation for such consequential damages as loss of future profits, interest, or rent, unless specifically covered by the policy.

It is quite permissible to insure the rent payable during reinstatement, but the offices usually limit this to an amount representing one year's rent. This is a point of some importance to a tenant, inasmuch as his tenancy is not affected by a fire, and until such tenancy has expired he is bound to pay rent, although the premises may be burnt down. But this may be provided for by an express agreement in the lease that in the event of the premises being destroyed or damaged by fire, rent shall cease until they are reinstated. In recent years considerable attention has been given to the insurance of consequential losses following fire.

Plant and machinery should be adequately defined, as they do not come under the definition fixtures. Patterns and models require to be specifically mentioned. Horses and carts are often separately insured.

With regard to the valuation of the properties destroyed, this is usually based upon their state of repair and condition at the time the fire broke out, and the insured cannot claim

Valuation of properties. to be supplied with new properties in place of those destroyed, if these, although they were before the fire still applicable to their original uses, have undergone considerable wear and tear. As regards the writing down of plant and machinery, the assured is covered for their value at the time of the fire, and the original cost, less depreciation, is not necessarily the basis of the claim. In some insurance offices a declaration is made on the face of the policy that the depreciation written off in the books shall not be taken for the purpose of assessing a fire loss. In the case of stocks on hand the cost of

production, not including any percentage for profit, is generally the basis upon which indemnification is made; but even this measure of compensation may be unobtainable if the properties have depreciated considerably as a result of obsolescence or of having been superseded by improved articles. With marketable merchandise, however, the indemnification is made on a different basis. In that case "the price current on the day of the fire will fix the amount of the liability of the insurers. The cost to the assured has nothing to do with the matter. . . . If the goods have risen in value the payment of the cost price would be no indemnity, while if the insured were to receive the cost price of goods which had fallen in value, or which having been on hand for a considerable period had become depreciated, the same objection would arise, and in the event of a fall in the produce market such a rule might be a serious temptation to arson."* There would be an exception, however, in the case of merchandise whose value had either improved or deteriorated after the date of sale, but before the time of delivery, during which interval the goods had been destroyed by fire.

An invariable provision in fire policies is that the insurers shall have the option of reinstating instead of paying the estimated amount of the loss incurred by the insured, but, except occasionally in the cases of buildings and machinery, this option is seldom exercised by the insurance offices.

As a matter of practice the course generally pursued with regard to settlement of claims, is to put up the damaged goods for sale by auction, the proceeds, after deducting the expenses, being handed to the insured, and the office making up the difference between the net proceeds of the salvage and the amount insured.

Insurers are not liable for loss owing to the assortment being broken, and they cannot be required, on the ground that companion articles are damaged, to sell by auction articles in good condition.

When the insurance is in favour of several persons, any one of them can receive the insurance money after adjustment and give discharge; but if the policy has been mortgaged, and the office have notice of the fact, they will require the mortgagee to join in the receipt, and under the Building Act the mortgagee, or other person interested, can call upon the insurers to expend the insurance money in reinstatement.

The Law of Fire Insurance."

BOILER INSURANCE.

Losses due to the explosion of boilers or collapse of flues are not covered by ordinary fire policies. Such losses can, however, be provided against by insurance with the companies carrying on this branch of insurance business. These companies generally undertake also the repairs, alterations, and maintenance of boilers, the inspection of steam boilers and engines, and the supply of steam power.

The insurers are guaranteed:—1. The responsible inspection of the boilers by an officer of the Insurance Company, with a written report of the result, at periodical intervals, or whenever necessary. 2. Indemnity to the assured up to the amount of the insurance, against all damage, not only to the boiler, but to the surrounding property, which may result, otherwise than by fire, from the explosion of the boiler or the collapse of the flues, provided that the explosion or collapse is not consequent on the over-loading of the safety-valves, or by the wilful act of the insured; and against injury to persons consequent upon the explosion, provided such injury is not covered by any other policy of insurance.

These Insurance Companies are also generally prepared to undertake, by a special contract, all repairs of boilers necessitated by wear and tear, as well as the periodical inspection and indication of engines.

Insurance can further be made on boilers with internal furnaces, if in good condition and adapted to the pressure required. In such cases the insurance covers all damage to the boiler itself, its mountings and the adjacent property, up to the full amount insured *in cases of actual explosion*, but does not cover any damage to, or injury of, the internal flues in cases of collapse.

Periodical inspection, with a written report, giving information and containing advice, but without insurance, is also undertaken by the same companies.

It will be seen from these notes, how important is the bearing such questions of insurance against losses have upon the accounts of a manufacturer, and how necessary it is for **Importance of subject to accountants** to give due consideration to these and **accountants** kindred subjects, in order that losses which, if sustained, would cause serious embarrassment, if not insolvency, may be adequately provided against. It is very desirable, having

regard to this point of view, that all insurance policies should be entered in an Insurance Register, which should be so ruled as to admit of a complete record of all the salient features of the policies; the extent of, and the premiums on, the insurances; and of the grouping of the various offices with which the policies are effected.

APPENDIX E.

TABLE FOR DETERMINING AMORTIZATION OF LEASES, &c.
(For examples, see page 150).

Years.	Years Pur. 3 per Cent.	Years Pur. 4 per Cent.	Years Pur. 5 per Cent.	Years Pur. 6 per Cent.	Years.
1 ¹ / ₂	.489	.485	.482	.479	1 ¹ / ₂
1	.971	.962	.952	.943	1
1 ¹ / ₂	1.446	1.428	1.411	1.395	1 ¹ / ₂
2	1.913	1.886	1.859	1.833	2
2 ¹ / ₂	2.374	2.335	2.297	2.259	2 ¹ / ₂
3	2.829	2.775	2.723	2.673	3
3 ¹ / ₂	3.276	3.207	3.140	3.075	3 ¹ / ₂
4	3.717	3.630	3.546	3.465	4
4 ¹ / ₂	4.152	4.045	3.942	3.844	4 ¹ / ₂
5	4.580	4.452	4.329	4.212	5
5 ¹ / ₂	5.002	4.851	4.707	4.570	5 ¹ / ₂
6	5.417	5.242	5.070	4.917	6
6 ¹ / ₂	5.827	5.626	5.435	5.255	6 ¹ / ₂
7	6.230	6.002	5.786	5.582	7
7 ¹ / ₂	6.628	6.371	6.129	5.901	7 ¹ / ₂
8	7.020	6.733	6.463	6.210	8
8 ¹ / ₂	7.406	7.087	6.789	6.510	8 ¹ / ₂
9	7.786	7.435	7.108	6.832	9
9 ¹ / ₂	8.161	7.776	7.419	7.085	9 ¹ / ₂
10	8.530	8.111	7.722	7.360	10
10 ¹ / ₂	8.894	8.439	8.018	7.627	10 ¹ / ₂
11	9.253	8.760	8.306	7.887	11
11 ¹ / ₂	9.606	9.076	8.588	8.139	11 ¹ / ₂
12	9.954	9.385	8.863	8.384	12
12 ¹ / ₂	10.297	9.688	9.132	8.622	12 ¹ / ₂
13	10.635	9.986	9.394	8.853	13
13 ¹ / ₂	10.968	10.277	9.649	9.077	13 ¹ / ₂
14	11.296	10.563	9.899	9.295	14
14 ¹ / ₂	11.619	10.843	10.142	9.507	14 ¹ / ₂
15	11.938	11.118	10.380	9.712	15
15 ¹ / ₂	12.252	11.388	10.612	9.912	15 ¹ / ₂
16	12.561	11.652	10.838	10.106	16
16 ¹ / ₂	12.866	11.911	11.059	10.294	16 ¹ / ₂
17	13.166	12.166	11.274	10.477	17
17 ¹ / ₂	13.462	12.415	11.484	10.655	17 ¹ / ₂
18	13.754	12.659	11.690	10.828	18
18 ¹ / ₂	14.041	12.899	11.890	10.995	18 ¹ / ₂
19	14.324	13.134	12.085	11.158	19
19 ¹ / ₂	14.603	13.364	12.276	11.316	19 ¹ / ₂
20	14.877	13.590	12.462	11.470	20

DETERMINING AMORTIZATION OF LEASES, ETC. 245

TABLE FOR DETERMINING THE AMORTIZATION OF LEASES, &c.
(For examples, see page 10.)

Years.	Years Pay. 7 per Cent.	Years Pay. 8 per Cent.	Years Pay. 9 per Cent.	Years Pay. 10 per Cent.	Years.
1	475	472	469	465	1
1 1/2	935	926	917	909	1 1/2
2	1379	1363	1347	1332	2
2 1/2	1808	1783	1759	1736	2 1/2
3	2223	2188	2154	2120	3
3 1/2	2624	2577	2531	2487	3 1/2
4	3012	2952	2893	2836	4
4 1/2	3387	3312	3240	3170	4 1/2
5	3750	3659	3572	3488	5
5 1/2	4100	3993	3890	3791	5 1/2
6	4439	4314	4194	4080	6
6 1/2	4767	4623	4486	4355	6 1/2
7	5083	4920	4765	4618	7
7 1/2	5389	5206	5033	4868	7 1/2
8	5695	5482	5289	5107	8
8 1/2	5991	5747	5535	5335	8 1/2
9	6248	6002	5770	5552	9
9 1/2	6515	6247	5995	5759	9 1/2
10	6774	6483	6211	5956	10
10 1/2	7024	6710	6418	6145	10 1/2
11	7265	6929	6616	6324	11
11 1/2	7499	7139	6805	6495	11 1/2
12	7721	7341	6987	6658	12
12 1/2	7943	7536	7161	6814	12 1/2
13	8154	7723	7327	6962	13
13 1/2	8358	7904	7487	7103	13 1/2
14	8555	8077	7640	7238	14
14 1/2	8745	8244	7786	7367	14 1/2
15	8930	8405	7926	7489	15
15 1/2	9108	8559	8061	7606	15 1/2
16	9280	8708	8189	7717	16
16 1/2	9447	8851	8313	7824	16 1/2
17	9608	8980	8431	7925	17
17 1/2	9763	9122	8544	8022	17 1/2
18	9914	9249	8652	8114	18
18 1/2	10059	9372	8756	8201	18 1/2
19	10200	9490	8855	8285	19
19 1/2	10336	9604	8950	8365	19 1/2
20	10467	9713	9041	8441	20
	10594	9818	9129	8511	

TABLE FOR DETERMINING THE AMORTIZATION OF LEASES, &c.
Continued.

Years.	Years Pur. 3 per Cent.		Years Pur. 4 per Cent.		Years Pur. 5 per Cent.		Years Pur. 6 per Cent.		Years.
20 $\frac{1}{2}$	15'148	15 $\frac{1}{4}$	13'812	13 $\frac{3}{4}$	12'644	12 $\frac{3}{4}$	11'619	11 $\frac{1}{2}$	20 $\frac{1}{2}$
21	15'415	15 $\frac{1}{2}$	14'029	14	12'821	12 $\frac{1}{2}$	11'764	11 $\frac{3}{4}$	21
21 $\frac{1}{2}$	15'678	15 $\frac{3}{4}$	14'242	14 $\frac{1}{4}$	12'994	13	11'905	12	21 $\frac{1}{2}$
22	15'937	16	14'451	14 $\frac{1}{2}$	13'163	13 $\frac{1}{4}$	12'042	12	22
22 $\frac{1}{2}$	16'192	16 $\frac{1}{4}$	14'656	14 $\frac{3}{4}$	13'328	13 $\frac{1}{2}$	12'174	12 $\frac{1}{4}$	22 $\frac{1}{2}$
23	16'444	16 $\frac{1}{2}$	14'857	14 $\frac{3}{4}$	13'489	13 $\frac{3}{4}$	12'303	12 $\frac{1}{2}$	23
23 $\frac{1}{2}$	16'691	16 $\frac{3}{4}$	15'054	15	13'645	13 $\frac{3}{4}$	12'429	12 $\frac{3}{4}$	23 $\frac{1}{2}$
24	16'936	17	15'247	15 $\frac{1}{2}$	13'799	13 $\frac{1}{2}$	12'550	12 $\frac{3}{4}$	24
24 $\frac{1}{2}$	17'176	17 $\frac{1}{4}$	15'436	15 $\frac{3}{4}$	13'948	14	12'669	12 $\frac{3}{4}$	24 $\frac{1}{2}$
25	17'413	17 $\frac{1}{2}$	15'622	15 $\frac{3}{4}$	14'094	14	12'783	12 $\frac{3}{4}$	25
25 $\frac{1}{2}$	17'647	17 $\frac{3}{4}$	15'804	15 $\frac{3}{4}$	14'236	14 $\frac{1}{4}$	12'895	13	25 $\frac{1}{2}$
26	17'877	18	15'983	16	14'375	14 $\frac{1}{2}$	13'003	13	26
26 $\frac{1}{2}$	18'104	18	16'158	16 $\frac{1}{4}$	14'511	14 $\frac{3}{4}$	13'108	13	26 $\frac{1}{2}$
27	18'327	18 $\frac{1}{4}$	16'330	16 $\frac{1}{2}$	14'643	14 $\frac{1}{2}$	13'211	13 $\frac{1}{4}$	27
27 $\frac{1}{2}$	18'547	18 $\frac{1}{2}$	16'498	16 $\frac{3}{4}$	14'772	14 $\frac{3}{4}$	13'310	13 $\frac{1}{2}$	27 $\frac{1}{2}$
28	18'764	18 $\frac{3}{4}$	16'663	16 $\frac{3}{4}$	14'898	15	13'406	13 $\frac{3}{4}$	28
28 $\frac{1}{2}$	18'978	19	16'825	16 $\frac{3}{4}$	15'021	15	13'500	13 $\frac{3}{4}$	28 $\frac{1}{2}$
29	19'188	19 $\frac{1}{4}$	16'984	17	15'141	15 $\frac{1}{4}$	13'591	13 $\frac{3}{4}$	29
29 $\frac{1}{2}$	19'396	19 $\frac{1}{2}$	17'139	17 $\frac{1}{4}$	15'258	15 $\frac{1}{2}$	13'679	13 $\frac{3}{4}$	29 $\frac{1}{2}$
30	19'600	19 $\frac{1}{2}$	17'292	17 $\frac{1}{2}$	15'372	15 $\frac{1}{2}$	13'765	13 $\frac{3}{4}$	30
30 $\frac{1}{2}$	19'802	19 $\frac{3}{4}$	17'442	17 $\frac{3}{4}$	15'484	15 $\frac{3}{4}$	13'848	13 $\frac{3}{4}$	30 $\frac{1}{2}$
31	20'000	20	17'588	17 $\frac{3}{4}$	15'593	15 $\frac{3}{4}$	13'929	14	31
31 $\frac{1}{2}$	20'196	20 $\frac{1}{4}$	17'732	17 $\frac{3}{4}$	15'699	15 $\frac{3}{4}$	14'008	14	31 $\frac{1}{2}$
32	20'389	20 $\frac{1}{2}$	17'874	17 $\frac{3}{4}$	15'803	15 $\frac{3}{4}$	14'084	14	32
32 $\frac{1}{2}$	20'579	20 $\frac{3}{4}$	18'012	18	15'904	16	14'158	14 $\frac{1}{4}$	32 $\frac{1}{2}$
33	20'766	20 $\frac{3}{4}$	18'148	18 $\frac{1}{4}$	16'003	16	14'230	14 $\frac{1}{4}$	33
33 $\frac{1}{2}$	20'950	21	18'281	18 $\frac{1}{4}$	16'099	16	14'300	14 $\frac{1}{4}$	33 $\frac{1}{2}$
34	21'132	21 $\frac{1}{4}$	18'411	18 $\frac{1}{4}$	16'193	16 $\frac{1}{4}$	14'368	14 $\frac{1}{4}$	34
34 $\frac{1}{2}$	21'311	21 $\frac{1}{2}$	18'539	18 $\frac{1}{4}$	16'285	16 $\frac{1}{4}$	14'434	14 $\frac{1}{4}$	34 $\frac{1}{2}$
35	21'487	21 $\frac{1}{2}$	18'665	18 $\frac{1}{4}$	16'374	16 $\frac{1}{4}$	14'498	14 $\frac{1}{4}$	35
35 $\frac{1}{2}$	21'661	21 $\frac{3}{4}$	18'788	18 $\frac{1}{4}$	16'462	16 $\frac{1}{4}$	14'561	14 $\frac{1}{4}$	35 $\frac{1}{2}$
36	21'832	21 $\frac{3}{4}$	18'908	19	16'547	16 $\frac{1}{4}$	14'621	14 $\frac{1}{4}$	36
36 $\frac{1}{2}$	22'001	22	19'027	19	16'630	16 $\frac{1}{4}$	14'680	14 $\frac{1}{4}$	36 $\frac{1}{2}$
37	22'167	22 $\frac{1}{4}$	19'143	19 $\frac{1}{4}$	16'711	16 $\frac{1}{4}$	14'737	14 $\frac{1}{4}$	37
37 $\frac{1}{2}$	22'331	22 $\frac{1}{2}$	19'256	19 $\frac{1}{4}$	16'791	16 $\frac{1}{4}$	14'792	14 $\frac{1}{4}$	37 $\frac{1}{2}$
38	22'492	22 $\frac{1}{2}$	19'368	19 $\frac{1}{4}$	16'868	16 $\frac{1}{4}$	14'846	14 $\frac{1}{4}$	38
38 $\frac{1}{2}$	22'652	22 $\frac{3}{4}$	19'477	19 $\frac{1}{4}$	16'943	17	14'898	15	38 $\frac{1}{2}$
39	22'808	22 $\frac{3}{4}$	19'584	19 $\frac{1}{4}$	17'017	17	14'949	15	39
39 $\frac{1}{2}$	22'963	23	19'690	19 $\frac{1}{4}$	17'089	17	14'998	15	39 $\frac{1}{2}$
40	23'115	23	19'793	19 $\frac{1}{4}$	17'159	17 $\frac{1}{4}$	15'046	15	40

DETERMINING AMORTIZATION OF LEASES, ETC. 247

TABLE FOR DETERMINING THE AMORTIZATION OF LEASES, &c.
Continued.

Years.	Years Pur. 7 per Cent.		Years Pur. 8 per Cent.		Years Pur. 9 per Cent.		Years Pur. 10 per Cent.		Years.
20 $\frac{1}{2}$	10'17	10 $\frac{1}{2}$	9'919	10	9'212	9 $\frac{1}{2}$	8'583	8 $\frac{1}{2}$	20 $\frac{1}{2}$
21	10'836	10 $\frac{3}{4}$	10'017	10	9'292	9 $\frac{1}{2}$	8'649	8 $\frac{1}{2}$	21
21 $\frac{1}{2}$	10'950	11	10'111	10	9'369	9 $\frac{1}{2}$	8'712	8 $\frac{1}{2}$	21 $\frac{1}{2}$
22	11'061	11	10'201	10 $\frac{1}{2}$	9'442	9 $\frac{1}{2}$	8'772	8 $\frac{1}{2}$	22
22 $\frac{1}{2}$	11'168	11 $\frac{1}{2}$	10'288	10 $\frac{1}{2}$	9'513	9 $\frac{1}{2}$	8'829	8 $\frac{1}{2}$	22 $\frac{1}{2}$
23	11'272	11 $\frac{1}{2}$	10'371	10 $\frac{1}{2}$	9'580	9 $\frac{1}{2}$	8'883	9	23
23 $\frac{1}{2}$	11'372	11 $\frac{3}{4}$	10'451	10 $\frac{3}{4}$	9'645	9 $\frac{3}{4}$	8'935	9	23 $\frac{1}{2}$
24	11'469	11 $\frac{3}{4}$	10'529	10 $\frac{3}{4}$	9'707	9	8'985	9	24
24 $\frac{1}{2}$	11'563	11 $\frac{3}{4}$	10'603	10 $\frac{3}{4}$	9'766	9 $\frac{1}{2}$	9'032	9	24 $\frac{1}{2}$
25	11'654	11 $\frac{3}{4}$	10'675	10 $\frac{3}{4}$	9'823	9 $\frac{1}{2}$	9'077	9	25
25 $\frac{1}{2}$	11'741	11 $\frac{3}{4}$	10'744	10 $\frac{3}{4}$	9'877	10	9'120	9	25 $\frac{1}{2}$
26	11'826	11 $\frac{3}{4}$	10'810	10 $\frac{3}{4}$	9'929	10	9'161	9 $\frac{1}{2}$	26
26 $\frac{1}{2}$	11'908	12	10'874	10 $\frac{3}{4}$	9'979	10	9'200	9 $\frac{1}{2}$	26 $\frac{1}{2}$
27	11'987	12	10'935	11	10'027	10	9'237	9 $\frac{1}{2}$	27
27 $\frac{1}{2}$	12'063	12	10'994	11	10'072	10	9'273	9 $\frac{1}{2}$	27 $\frac{1}{2}$
28	12'137	12 $\frac{1}{2}$	11'051	11	10'116	10	9'307	9 $\frac{1}{2}$	28
28 $\frac{1}{2}$	12'209	12 $\frac{1}{2}$	11'106	11	10'158	10 $\frac{1}{2}$	9'339	9 $\frac{1}{2}$	28 $\frac{1}{2}$
29	12'278	12 $\frac{1}{2}$	11'158	11 $\frac{1}{2}$	10'198	10 $\frac{1}{2}$	9'370	9 $\frac{1}{2}$	29
29 $\frac{1}{2}$	12'344	12 $\frac{1}{2}$	11'209	11 $\frac{1}{2}$	10'237	10 $\frac{1}{2}$	9'399	9 $\frac{1}{2}$	29 $\frac{1}{2}$
30	12'409	12 $\frac{1}{2}$	11'258	11 $\frac{1}{2}$	10'274	10 $\frac{1}{2}$	9'427	9 $\frac{1}{2}$	30
30 $\frac{1}{2}$	12'471	12 $\frac{1}{2}$	11'305	11 $\frac{1}{2}$	10'309	10 $\frac{1}{2}$	9'454	9 $\frac{1}{2}$	30 $\frac{1}{2}$
31	12'532	12 $\frac{3}{4}$	11'350	11 $\frac{1}{2}$	10'343	10 $\frac{1}{2}$	9'479	9 $\frac{1}{2}$	31
31 $\frac{1}{2}$	12'590	12 $\frac{3}{4}$	11'393	11 $\frac{1}{2}$	10'375	10 $\frac{1}{2}$	9'503	9 $\frac{1}{2}$	31 $\frac{1}{2}$
32	12'647	12 $\frac{3}{4}$	11'435	11 $\frac{1}{2}$	10'406	10 $\frac{1}{2}$	9'526	9 $\frac{1}{2}$	32
32 $\frac{1}{2}$	12'701	12 $\frac{3}{4}$	11'475	11 $\frac{1}{2}$	10'436	10 $\frac{1}{2}$	9'548	9 $\frac{1}{2}$	32 $\frac{1}{2}$
33	12'754	12 $\frac{3}{4}$	11'514	11 $\frac{1}{2}$	10'464	10 $\frac{1}{2}$	9'569	9 $\frac{1}{2}$	33
33 $\frac{1}{2}$	12'805	12 $\frac{3}{4}$	11'551	11 $\frac{1}{2}$	10'492	10 $\frac{1}{2}$	9'589	9 $\frac{1}{2}$	33 $\frac{1}{2}$
34	12'854	12 $\frac{3}{4}$	11'587	11 $\frac{1}{2}$	10'518	10 $\frac{1}{2}$	9'609	9 $\frac{1}{2}$	34
34 $\frac{1}{2}$	12'902	13	11'621	11 $\frac{1}{2}$	10'543	10 $\frac{1}{2}$	9'627	9 $\frac{1}{2}$	34 $\frac{1}{2}$
35	12'948	13	11'655	11 $\frac{1}{2}$	10'567	10 $\frac{1}{2}$	9'644	9 $\frac{1}{2}$	35
35 $\frac{1}{2}$	12'992	13	11'686	11 $\frac{1}{2}$	10'590	10 $\frac{1}{2}$	9'661	9 $\frac{1}{2}$	35 $\frac{1}{2}$
36	13'035	13	11'717	11 $\frac{1}{2}$	10'612	10 $\frac{1}{2}$	9'677	9 $\frac{1}{2}$	36
36 $\frac{1}{2}$	13'077	13	11'747	11 $\frac{1}{2}$	10'633	10 $\frac{1}{2}$	9'692	9 $\frac{1}{2}$	36 $\frac{1}{2}$
37	13'117	13	11'775	11 $\frac{1}{2}$	10'653	10 $\frac{1}{2}$	9'706	9 $\frac{1}{2}$	37
37 $\frac{1}{2}$	13'156	13 $\frac{1}{2}$	11'803	11 $\frac{1}{2}$	10'672	10 $\frac{1}{2}$	9'720	9 $\frac{1}{2}$	37 $\frac{1}{2}$
38	13'193	13 $\frac{1}{2}$	11'829	11 $\frac{1}{2}$	10'691	10 $\frac{1}{2}$	9'733	9 $\frac{1}{2}$	38
38 $\frac{1}{2}$	13'230	13 $\frac{1}{2}$	11'854	11 $\frac{1}{2}$	10'709	10 $\frac{1}{2}$	9'745	9 $\frac{1}{2}$	38 $\frac{1}{2}$
39	13'265	13 $\frac{1}{2}$	11'879	12	10'726	10 $\frac{1}{2}$	9'757	9 $\frac{1}{2}$	39
39 $\frac{1}{2}$	13'299	13 $\frac{1}{2}$	11'902	12	10'742	10 $\frac{1}{2}$	9'768	9 $\frac{1}{2}$	39 $\frac{1}{2}$
40	13'332	13 $\frac{1}{2}$	11'925	12	10'757	10 $\frac{1}{2}$	9'779	9 $\frac{1}{2}$	40

248 DETERMINING AMORTIZATION OF LEASES, ETC.

TABLE FOR DETERMINING THE AMORTIZATION OF LEASES, &c.
Continued.

Years.	Years Pur. 3 per Cent.		Years Pur. 4 per Cent.		Years Pur. 5 per Cent.		Years Pur. 6 per Cent.		Years.
40½	23'265	23½	19'894	20	17'228	17½	15'093	15	40½
41	23'412	23½	19'993	20	17'294	17½	15'138	15½	41
41½	23'558	23½	20'090	20	17'360	17½	15'182	15½	41½
42	23'701	23½	20'186	20½	17'423	17½	15'225	15½	42
42½	23'843	23½	20'279	20½	17'485	17½	15'266	15½	42½
43	23'982	24	20'371	20½	17'546	17½	15'306	15½	43
43½	24'119	24	20'461	20½	17'605	17½	15'345	15½	43½
44	24'254	24	20'549	20½	17'663	17½	15'383	15½	44
44½	24'387	24	20'635	20½	17'719	17½	15'420	15½	44½
45	24'519	24½	20'720	20½	17'774	17½	15'456	15½	45
45½	24'648	24½	20'803	20½	17'828	17½	15'491	15½	45½
46	24'775	24½	20'885	21	17'880	18	15'524	15½	46
46½	24'901	25	20'965	21	17'931	18	15'557	15½	46½
47	25'025	25	21'043	21	17'981	18	15'589	15½	47
47½	25'147	25½	21'120	21	18'030	18	15'620	15½	47½
48	25'267	25½	21'195	21½	18'077	18	15'650	15½	48
48½	25'385	25½	21'269	21½	18'123	18	15'679	15½	48½
49	25'502	25½	21'341	21½	18'169	18½	15'708	15½	49
49½	25'617	25½	21'413	21½	18'213	18½	15'735	15½	49½
50	25'730	25½	21'482	21½	18'256	18½	15'762	15½	50
51	25'951	26	21'617	21½	18'339	18½	15'813	15½	51
52	26'166	26	21'748	21½	18'418	18½	15'861	15½	52
53	26'375	26½	21'873	21½	18'493	18½	15'907	16	53
54	26'578	26½	21'993	22	18'565	18½	15'950	16	54
55	26'774	26½	22'109	22	18'633	18½	15'991	16	55
56	26'965	27	22'220	22½	18'699	18½	16'029	16	56
57	27'151	27½	22'327	22½	18'761	18½	16'065	16	57
58	27'331	27½	22'430	22½	18'820	18½	16'099	16	58
59	27'506	27½	22'528	22½	18'876	19	16'131	16½	59
60	27'676	27½	22'623	22½	18'929	19	16'161	16½	60
65	28'453	28½	23'047	23	19'161	19½	16'289	16½	65
70	29'123	29	23'395	23½	19'343	19½	16'385	16½	70
75	29'702	29½	23'680	23½	19'485	19½	16'456	16½	75
80	30'201	30½	23'915	24	19'596	19½	16'509	16½	80
85	30'631	30½	24'109	24	19'684	19½	16'549	16½	85
90	31'002	31	24'267	24½	19'752	19½	16'579	16½	90
95	31'323	31½	24'398	24½	19'806	19½	16'601	16½	95
100	31'599	31½	24'505	24½	19'848	19½	16'618	16½	100
Perp.	33'333	33½	25'000	25	20'000	20	16'667	16½	Perp.

DETERMINING AMORTIZATION OF LEASES, ETC. 249

TABLE FOR DETERMINING THE AMORTIZATION OF LEASES, &c
Continued.

Years.	Years Pur. 7 per Cent.		Years Pur. 8 per Cent.		Years Pur. 9 per Cent.		Years Pur. 10 per Cent.		Years.
40½	13.363	13½	11.046	12	10.772	10½	9.789	9½	40½
41	13.391	13½	11.067	12	10.787	10½	9.799	9½	41
41½	13.424	13½	11.087	12	10.801	10½	9.808	9½	41½
42	13.452	13½	12.007	12	10.813	10½	9.817	9½	42
42½	13.480	13½	12.025	12	10.826	10½	9.826	9½	42½
43	13.507	13½	12.043	12	10.838	10½	9.834	9½	43
43½	13.533	13½	12.060	12	10.849	10½	9.842	9½	43½
44	13.558	13½	12.077	12	10.861	10½	9.849	9½	44
44½	13.582	13½	12.093	12	10.871	10½	9.856	9½	44½
45	13.606	13½	12.108	12	10.881	11	9.863	9½	45
45½	13.628	13½	12.123	12	10.891	11	9.869	9½	45½
46	13.650	13½	12.137	12½	10.900	11	9.875	10	46
46½	13.671	13½	12.151	12½	10.909	11	9.881	10	46½
47	13.692	13½	12.164	12½	10.918	11	9.887	10	47
47½	13.711	13½	12.177	12½	10.926	11	9.892	10	47½
48	13.730	13½	12.189	12½	10.934	11	9.897	10	48
48½	13.749	13½	12.201	12½	10.941	11	9.902	10	48½
49	13.767	13½	12.212	12½	10.948	11	9.906	10	49
49½	13.784	13½	12.223	12½	10.955	11	9.911	10	49½
50	13.801	13½	12.233	12½	10.962	11	9.915	10	50
51	13.817	13½	12.253	12½	10.974	11	9.921	10	51
52	13.862	13½	12.272	12½	10.985	11	9.930	10	52
53	13.890	14	12.288	12½	10.996	11	9.936	10	53
54	13.916	14	12.304	12½	11.005	11	9.942	10	54
55	13.940	14	12.319	12½	11.014	11	9.947	10	55
56	13.963	14	12.332	12½	11.022	11	9.952	10	56
57	13.984	14	12.344	12½	11.029	11	9.956	10	57
58	14.003	14	12.356	12½	11.036	11	9.960	10	58
59	14.022	14	12.367	12½	11.042	11	9.964	10	59
60	14.039	14	12.377	12½	11.048	11	9.967	10	60
65	14.110	14	12.416	12½	11.070	11	9.980	10	65
70	14.160	14½	12.443	12½	11.084	11	9.987	10	70
75	14.196	14½	12.461	12½	11.094	11	9.992	10	75
80	14.222	14½	12.474	12½	11.100	11	9.995	10	80
85	14.240	14½	12.482	12½	11.104	11	9.997	10	85
90	14.253	14½	12.488	12½	11.106	11	9.998	10	90
95	14.263	14½	12.492	12½	11.108	11	9.999	10	95
100	14.269	14½	12.494	12½	11.109	11	9.999	10	100
Perp.	14.286	14½	12.500	12½	11.111	11	10.000	10	Perp.

EXAMPLES.

The foregoing Table is reproduced from the twenty-second edition of Inwood's "Tables for the Purchasing of Estates, etc.," by kind permission of the publishers, Messrs. Crosby Lockwood and Son, and shows the annual amounts to be debited to Profit and Loss Account, and credited to account of Lease or other object to be amortized in a given number of years with interest at 3, 4, 5, 6, 7, 8, 9, and 10 per cent. per annum. The table is also serviceable for ascertaining the value of a Lease at the several rates of interest.*

EXAMPLE:—A Lease or Annuity for 14 years, to make 3 per cent. and to get back the principal, is worth 11.296 or $11\frac{1}{4}$ years' purchase of the clear annual rent; at 4 per cent., 10.563, or $10\frac{1}{2}$ years' purchase; at 5 per cent., 9.899, or 10 years' purchase; at 6 per cent., 9.295, or $9\frac{1}{4}$ years' purchase. In calculating the value of Annuities, Leases, etc., *Compound* Interest is always reckoned and allowed.

A hypothetical Ledger Account, showing the amortization of a Lease at 5 per cent. per annum, will be found, with a description in Chapter VII.

* For other rates of interest than are shown in the Table here reproduced, the reader may be referred to the current (Twenty-eighth) revised edition of "Inwood's Tables" (London: Crosby Lockwood & Son, 1900), where a similar Table is given, but extended to many more rates of interest—16 in all namely, $1\frac{1}{2}$, $1\frac{3}{4}$, 2, $2\frac{1}{4}$, $2\frac{1}{2}$, $2\frac{3}{4}$, 3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5, 6, 7, 8, 9, and 10 per cent.

GLOSSARY OF TERMS.

GLOSSARY OF SOME OF THE TERMS USED.

The definitions do not extend to terms used in quotations or in the Appendices.

Amortization.—The process by which provision is made for the expiration of value in an asset.

Appreciation—The increase in value of assets either through special or general causes. (Opposed to Depreciation, *q. v.*)

Assets.—Property of all kinds, possessed or in reversion which can be applied in satisfaction of liabilities, or turned into money or money's worth. (Opposed to Liabilities, *q. v.*)

Balance Sheet.—A complete summary of debit and credit balances as they appear in the accounts in the Ledger at a given date.

Book Value.—The monetary value of any asset according to the books of account. (Distinguished from Market Value, *q. v.*)

Capital.—The money or properties invested in the business. Assets applied to production of further wealth, or assets used as a source of income, or set aside for the satisfaction of future needs.

Cash Books.—A commercial book recording the cash transactions.

Commercial Books.—The books pertaining to the counting-house, such as the Ledger, Journal, Cash Book, recording mercantile transactions, as distinguished from Factory Books treating of merchandise.

Commercial Ledger.—The Mercantile Ledger (as distinguished from the Stores, Stock, and Plant Ledgers).

Cost Journal.—The book in which adjusting entries as to cost are made.

Cost Ledger—Cost Book.—The book in which are collected all entries relating to prime cost, and to cost of production.

Cost of Production.—The total expenditure incurred in the production of a commodity.

- Counting-House.**—The place, in which the mercantile book-keeping is conducted.
- Craft Register.**—The book recording the work done by, and the earnings of, each of the Craft.
- Credit Note.**—If received, an advice of indebtedness to the firm. If issued, an advice of indebtedness by the firm.
- Credit Note Register.**—A commercial book in which the credit notes received are registered.
- Day Book.**—A commercial book in which the sales of stock are recorded.
- Delivery Note.**—A request to receive, and a description of, material tendered.
- Depreciation.**—The falling off in the value of buildings, machinery, plant, and other assets. (Distinguished from Appreciation, *q. v.*)
- Dilapidations.**—Those defects in a tenement which have arisen from neglect or misuse; and of use or age, if the efficiency of the structure is destroyed.
- Establishment Expenses—General Charges.**—The general expenses which cannot be *directly* charged to any particular process or branch of a business.
- Estimate of Cost.**—A calculation of the probable cost of a commodity.
- Factory.**—The place in which manufacturing operations are carried on.
- Factory Accounts.**—The systematic registration for purposes of account of transactions appertaining to manufacture.
- Factory General Charges.**—The general expenses incurred in the factory which cannot be directly charged to any particular Order No.
- Factory Order.**—(*See STOCK ORDER.*)
- Factory General Charges Book.**—The book in which the Factory General Charges are collected.
- Fixed Capital.**—That part of the capital of a firm which consists of the instruments of production of a more or less permanent character, and the return from which is spread over a period of time.
- Fixed Plant.**—The machinery and appurtenances required for the purpose of manufacture, and permanently located in one position in a factory. (Distinguished from Loose Plant and Tools, *q. v.*)

Foreman.—A superintendent of a floor, wing, or shop in a factory, or of a set of men.

Fuel Summary Form.—A form summarizing the various items of cost in the delivered price of fuel.

General Charges.—(See ESTABLISHMENT EXPENSES.)

General Stores Account.—The account in the Commercial Ledger in which the receipts and issues of stores, as recorded in the Commercial Books, are collected.

Going Concern.—A business the efficiency of which, for the purpose of profit, is maintained.

Goodwill.—The value pertaining to the *clientèle*, or interest in the business.

Indirect Expenses.—Outlays not directly remunerative. (Distinguished from General Charges and Establishment Expenses, *q. v.*)

Indirect Factory Expenses.—Outlays made in the factory which are not directly remunerative. (Distinguished from Factory General Charges.)

Inventory.—A detailed and descriptive catalogue of properties.

Invoice.—If received, an advice of indebtedness by the firm. If issued, an advice of indebtedness to the firm.

Invoice Allocation (or Bought Day) Book.—A commercial book in which invoices for goods purchased are entered and analysed.

Invoice Register Book.—A commercial book in which the invoices received are registered.

Issue Notes.—(See STORES WARRANTS.)

Joint Stock Company.—An association of individuals who combine by the subscription of capital to carry on a business.

Labour.—That factor in the cost of production which in a given trade represents the work of adapting materials either manually or by machinery.

Leading Hand.—The senior hand of a floor, wing, or shop in a factory, or of a gang of men.

Liabilities.—The debts and obligations of a firm. (Opposed to Assets, *q. v.*)

Loose Plant and Tools.—The machinery, tools, and appurtenances temporarily located in any position in a factory for the purpose of manufacture. (Distinguished from Fixed Plant, *q. v.*)

Magazine.—(See STORES.)

Maintenance.—The preservation of the efficiency of fixed capital

Manufactory.—(*See* FACTORY.)

Manufacturing Account.—The Account in the Commercial Ledger which shows the value of the Stock Orders or goods in course of manufacture.

Manufacturing Order.—(*See* STOCK ORDER.)

Market Price.—The price at or about which all other similar commodities are being sold in the same place. (Distinguished from Book Value, *q. v.*)

Material—Stores.—That factor in the cost of production which represents the raw material of trade employed in the manufacture of commodities.

Obsolescence.—The process by which an article before it is worn out falls either wholly or in part into desuetude in a certain trade, and as a result is no longer of current application in that trade.

Order Form.—An instruction to a vendor to supply material or do work.

Orders Received Book.—A commercial book recording the orders received.

Outworks Time Record.—A form used by employes engaged outside the factory, showing how their time has been spent.

Overlooker.—A supervisor of labour.

Overtime.—Time worked beyond the normal period of employment in the factory.

Overtime Book.—A factory book in which the timekeeper records the overtime made.

Overtime Comparison Book.—A book in which comparison is made between the cost of ordinary time and overtime.

Overtime Return.—A return showing the overtime worked in the factory during a certain period.

Patents Account.—The account in the commercial books which records the book value of patents.

Patterns.—The types to and from which articles are made.

Petty Cash Book.—A commercial book recording small cash transactions.

Piece Work.—Work paid for by the piece or job. (Distinguished from work paid by time.)

Piece Work Analysis Book.—A book in which the piece work returns are analysed and a comparison instituted as to the relative value, as regards the product, of time and piece wages.

Piece Work Return.—A factory form used by employes engaged on piece work.

Plant.—The machinery and appurtenances required for the purpose of manufacture. (*Vide Fixed Capital, Fixed Plant, Loose Plant.*)

Plant and Buildings Ledger.—A book in which are collected all entries relating to fixed and loose plant and buildings.

Plant Debit Note.—A factory form used to record the employment of plant.

Plant Debit Summary.—The form on which Plant Debit Notes are summarised.

Prime Cost.—The original or direct cost of an article.

Production Order.—(*See STOCK ORDER.*)

Profit and Loss Account.—The statement which shows the pecuniary result of the business effected. (Distinguished from Revenue, *q. v.*)

Railway Rates Book.—The book in which railway rates are recorded under the headings of the various charges making up the rate.

Rate Book.—(*See WAGES RATE BOOK.*)

Raw Material.—The unadapted materials employed in the production of commodities of a particular trade. The manufactured articles of one trade may be the raw materials of another.

Renewal.	} (<i>See MAINTENANCE.</i>)
Renovation.	
Repairs.	

Reserve Fund.—A provision for contingencies.

Residual Value.—The ultimate selling value of assets when worn out or superseded.

Retail Warehouse.—The repository for commodities which have been purchased from the makers or other vendors for reselling.

Revenue.—The gross return from capital employed. (Distinguished from Profit and Loss, *q. v.*)

Sales Analysis Book.—A commercial book in which an analysis is made of the sale of stock.

Sales Cancelled Book.—A commercial book in which the credit notes given to customers in respect of stock returned are entered.

Scrap.—The minimum value of articles, *i.e.* the price that may be depended on for waste material.

Shop Cost.—(*See* PRIME COST.)

Shop Returns Book.—A book in which are recorded the Stores Debit Notes.

Shop Work Order.—(*See* STOCK ORDER.)

Sinking Fund.—A fund invested in order to provide for an eventual loss or claim.

Stock—Stock-in-Trade.—Those commodities which, having been manufactured or purchased, are on hand for sale; manufactured commodities on hand; contingently, articles purchased for retailing. (Distinguished from Stores, *q. v.*)

Stock Account.—The account in the Commercial Ledger in which are summarised the monetary transactions relating to stock.

Stock Books.—Books relating to the receipt and issue of stock.

Stock Debit Note.—A factory form used to record the completion of articles manufactured for stock, and their transfer from the factory to the warehouse.

Stock Issued Book.—A factory book in which the stock requisitions are recorded.

Stock Ledger.—The book in which all entries relating to stock are collected. (Distinguished from Stores, Plant, and Commercial Ledgers.)

Stock Order.—The instruction to manufacture commodities for stock and to record the expenditure. (Distinguished from Working Order, *q. v.*)

Stock Order No.—The number given to a Stock Order. (Distinguished from Working Order No., *q. v.*)

Stock Received Book.—A factory book recording the receipts of stock.

Stock Requisition.—A form used to record the withdrawal of stock from the warehouse.

Stock Returned by Customers Analysis Book.—A commercial book in which the Stock Returned Debit Notes are analysed.

Stock Returned by Customers Book.—A factory book in which the Stock Returned Debit Notes are recorded.

Stock Returned Debit Note.—A factory form used to record the return of stock to the warehouse by customers.

Stock-taking.—(*See* SURVEY.)

Stock Uncompleted.—Articles in course of manufacture for stock.

Store.—The repository for stores.

Stores.—The raw material or partially completed articles employed in manufacture or for other purposes. (Distinguished from Stock, *q. v.*)

Stores Account.—(*See* GENERAL STORES ACCOUNT.)

Stores Debit Note.—A factory form recording the return to store of waste or surplus material.

Stores Issued Book.—A factory book in which the Stores Warrants are entered.

Storekeeper.—The officer in charge of stores. (Distinguished from Warehouseman, *q. v.*)

Stores Ledger.—The book in which all entries relating to stores are collected. (Distinguished from Stock, Plant, and Commercial Ledgers.)

Stores Received Book.—A factory book in which the invoices for goods purchased are entered.

Stores Rejected Book.—A factory book in which are recorded all the credit notes received from vendors of goods returned.

Stores Requisition.—A requisition from the storekeeper for the purchase of material.

Stores Requisition Book.—The book in which stores requisitions are entered.

Stores Warrant.—A factory form used for the withdrawal of stores.

Survey—Stock-taking.—The process of taking an inventory and of examining the condition, etc. of properties. (*See* VALUATION.)

Suspense Account.—An impersonal account in the Commercial Ledger to which items in abeyance are charged.

Symbolic Nomenclature.—The designation by symbols of machines and parts.

Time Allocation Book.—The book in which the time records are entered, and in which their apportionment to the various orders is carried out.

Time Book.—A factory book used by the timekeeper to record the time made by the employes.

Time Clerk.—The clerk who enters the employes' records of time, and analyses the same under the various working orders.

Timekeeper or Gatekeeper.—The employé whose duty it is to record the time the other employes enter and leave the factory.

Time Record.—A factory form used by the employes, recording how their time has been spent.

- Time Sheet.**—A form used to record the time of lighters, barges, or boats on their journeys.
- Tools.**—Instruments or implements of production of a more or less permanent nature.
- Tool Order.**—An instruction (subsidiary to a Stock Order) to manufacture tools, and by means of which the cost of those to be used in the manufacture of a commodity is ascertained.
- Tool Order No.**—The number given to a Tool Order.
- Trading Account.**—The account in the Commercial Ledger which represents the trading transactions. The debit side of the account records the cost of stock issued, and the credit the proceeds of sales.
- Transfer Analysis Book.**—A commercial book analysing the transfer from stores to warehouse, and *vice versa*.
- Transfer Book.**—A factory book used to record Transfer Notes.
- Transfer Note.**—A form employed to record transfer of commodities from store to warehouse, or *vice versa*.
- Unclaimed Wages Book.**—The book in which are entered the names and wages of those employes who are not paid in regular course.
- Valuation.**—The process of ascertaining by examination and survey the present and prospective value of properties or the earning power of any asset.
- Viewer.**—The examiner of manufactured articles or parts.
- Wages.**—Payment for labour.
- Wages Account.**—The account in the Commercial Ledger in which are collected all the entries relating to wages.
- Wages Advice.**—The form used to record the engagement, or dismissal, or resignation of employes, any alteration in their rates, fines levied, or premiums allowed.
- Wages Book.**—The book which records the amounts payable to each employe.
- Wages Rate Book.**—The book in which the rates of wages paid to employes are entered.
- Wagon and Van Statement Form.**—The form on which the earnings of the wagons and vans are shown.
- Wagon Journey Repairs Book.**—The book recording the repairs done to wagons whilst on journeys.
- Warehouse.**—The repository for stock.
- Warehouseman.**—The custodian of the stock. (Distinguished from Storekeeper, *q. v.*)

Wear and Tear.—The gradual and normal deterioration of plant and buildings. “.

Working Order.—An instruction to expend labour and material in the maintenance, repair, and renewal of plant and buildings, and to record this expenditure. (Distinguished from Stock Order, *q. v.*)

Working Order No.—The number given to a Working Order.

Writing Down—Writing-off.—The process by which the book value of an article is reduced.

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